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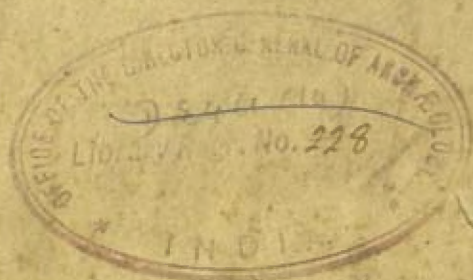
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IMPERIAL GAZETTEER OF INDIA

PROVINCIAL SERIES

PUNJAB

Vol. I
38

VOL. I

THE PROVINCE; MOUNTAINS, RIVERS, CANALS,
AND HISTORIC AREAS; AND THE DELHI
AND JULLUNDUR DIVISIONS

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PROVINCIAL GAZETTEERS OF INDIA

PUNJAB

VOLUME I

Punjab (*Panjāb*).—In its strict etymological sense the Punjab, or 'land of the five rivers,' is the country enclosed and watered by the JHELUM, CHENĀB, RĀVI, BEĀS, and SUTLEJ; but the Province as now constituted includes also the table-land of Sirhind between the Sutlej and the Jumna to the south of the former river, the Sind-Sāgar Doāb or wedge of country between the Jhelum and the INDUS, and west of the latter river the two tracts which form Dera Ghāzi Khān and part of Miānwāli District. The Province lies between 27° 39' and 34° 2' N. and 69° 23' and 79° 2' E., and with its Native States has an area of 133,741 square miles, being larger by one-tenth than the British Isles, and comprising a tenth of the area of the Indian Empire. Of the total area, 36,532 square miles belong to Native States under the political control of the Punjab Government, and the rest is British territory. The population in 1901 was 24,754,737 (of whom 4,424,398 were in the Native States), or 8.4 per cent. of the whole population of the Indian Empire.

On the north the Himālayan ranges divide the Punjab from Kashmīr and the North-West Frontier Province. On the west the Indus forms its main boundary with the latter Province, except that the Punjab includes the strip of riverain which forms the Isa Khel *tahsil* of Miānwāli District, west of that river. Its south-western extremity also lies west of the Indus and forms the large District of Dera Ghāzi Khān, thereby extending its frontier to the Sulaimān range, which divides it from Baluchistān. On the extreme south-west the Province adjoins Sind, and the Rājputāna desert forms its southern border. On the east, the Jumna and its tributary the Tons divide it from the United Provinces of Agra and Oudh, its

General
descrip-
tion.

Boun-
daries.

frontier north of the sources of the latter river being contiguous with Chinese Tibet.

Physical
divisions.

The Province falls into five main physical divisions. Three of these—the Himālayan region, the Himālayan submontane which stretches from the Jumna to the Salt Range, and the arid plateaux of that range—are small in area, but the submontane is the most fertile and wealthiest in the Punjab. The other two are the arid south-western plains, and the western portion of the Indo-Gangetic Plain west which extends as far eastward as Lahore. Both these divisions are of vast extent, but infertile towards the south, where they encroach on the plains of Sind and Rājputāna.

The
Doābs.

The Punjab proper comprises five *doābs*, or tracts lying between two rivers. These received their names from the emperor Akbar, who formed them by combining the first letters of the names of the rivers between which they lie. They are : the Bist Jullundur, also called the Sāharwāl Doāb, lying between the Beās and the Sutlej ; the Bāri, between the old bed of the Beās and the Rāvi ; the Rechna (Rachin-āb, or Rachin-ao), between the Rāvi and the Chenāb ; the Chinhath, between the Chenāb and the Bihat (another name for the Jhelum), also called the Chaj ; and the Sind-Sāgar, between the Indus and the Jhelum or Bihat.

Mountain
system.

The whole Central Punjab is a vast alluvial plain ; but the north-east of the Province is formed of a section of the HIMĀLAYAS, stretching up to and beyond the great central ranges so as to include the Tibetan cantons of Lāhul and Spiti. The SALT RANGE, with the plateaux which lie to the north between it and the Indus, forms its north-western angle, and the SULAIMĀN Range forms the southern half of the western frontier of the Province. These are the only mountain systems of importance ; but a few insignificant outliers of the ARĀVALLI system traverse Gurgaon District in the extreme south-east, and terminate in the famous Ridge at Delhi.

River
system.

All the seven great rivers of the Punjab rise in the Himālayas, and after long courses, sometimes of several hundred miles, amid snow-clad ranges, they debouch on the plains. The slope of the low country is to the south and south-west, and is very gradual, seldom exceeding 2 feet in a mile ; and this determines the course of the rivers. In the process of time each stream has cut for itself a wide valley, which lies well below the level of the plain, and whose banks mark the extreme limits of the course on either side. Within this valley the river meanders in a narrow but ill-defined and ever-shifting

channel. In the winter the stream is comparatively small ; but as the mountain snows melt at the approach of the hot season, the waters rise and overflow the surrounding country, often to a distance of several miles on either side. At the close of the rainy season, the waters recede, leaving wide expanses of fertile loam or less fertile sand.

Of these seven rivers the Indus is the greatest. Already a mighty stream when it emerges from the Hazāra hills, it flows almost due south past Attock. Here it enters a deep gorge, terminating at Kālābāgh, where it pierces the Salt Range. Thus far it forms the western boundary ; but south of Kālābāgh it enters the Province, and divides the Isa Khel *tahsil* of Miānwāli from the rest of that District. Farther south again it forms the western boundary until it re-enters Punjab territory near Bhakkar, and divides Dera Ghāzi Khān from Miānwāli and Muzaffargarh Districts and from the State of Bahāwalpur. The Jhelum enters the Punjab east of the Salt Range, flowing south between this and the Pabbi hills, which terminate at Mong Rasūl. Thence the river flows west and then south until it is joined by the Chenāb near Jhang. The Chenāb rises in the Himālayan canton of Lāhul within the Province, and after traversing the Chamba State and the Jammu province of Kashmīr debouches on the plains east of the Jhelum, into which it falls about 225 miles from the hills. The Rāvi, rising in Chamba, reaches the plain below Dalhousie, and joins the combined waters of the Jhelum and Chenāb 50 miles south of Jhang. The united streams of these three rivers form the Trimāb. The Beās, rising on the south of the Rhotang pass on the opposite side of the Central Himālaya to the Rāvi, traverses the Kulū valley southward, and then bends suddenly westward, through the Mandī State and Kāngra District, until it turns the northern flank of the Siwāliks, and enters the plains within a few miles of the Rāvi. Thence its course is more southerly, and it falls into the Sutlej about 70 miles from its debouchure. The Sutlej, rising near the source of the Indus in Tibet, enters the Province near the Shipki Pass, traverses Bashahr and other States of the Simla Hills, and pierces the Siwāliks near Rūpar. Thence it runs almost due west to its junction with the Beās near Sobraon, where it takes a more southerly course for 270 miles, and falls into the Trimāb 9 miles north of Uch. Below this confluence the waters of the Jhelum, Chenāb and Rāvi, Sutlej and Beās form the Panjnad, or 'five rivers,' which fall into the Indus at Mithankot. Lastly, the Jumna, the only one of the great rivers of the Province

which ultimately drains into the Bay of Bengal, rises in Tehri State in the United Provinces, and from its junction with the Tons at the eastern extremity of Sirmūr territory forms the boundary between the Punjab and the United Provinces for a distance of over 200 miles.

Scenery.

The Province presents great varieties of scenery, from the snow peaks and glaciers of the Upper Himālayas to the deserts of shifting sand in the Sind-Sāgar Doāb and Bahāwalpur. The scenery of the Himālayas has often been described. In the Salt Range it is picturesque and even grand in places, and in the interior of the range the slopes are everywhere green with box and bog-myrtle. The southern face exhibits a very rugged and broken appearance, but on the north the contours of the hills are for the most part smooth and undulating. Between the Salt Range and the Himālayas the aspect of the country varies greatly, from the deep, shaly, and infertile ravines of Jhelum to the rich uplands of Gūjar Khān. The Siwāliks and the Pabbi hills are much tamer than the Salt Range, and the vegetation which clothes them is coarser and scantier, though the Jaswān Dūn in Hoshiārpur is not lacking in richness and beauty. But the characteristic scenery of the Punjab is that of the plains, and the contrast between their appearance before and after the crops have been cut is most striking. As harvest approaches, the traveller, especially in the irrigated tracts, rides through an endless expanse of waving crops of different shades of colour, out of which the villages seem to rise like islets in an ocean of green. After the harvest all is changed; and the dull brown of the fields is relieved only by the trees, solitary or in groves and avenues, and by the hamlets and village ponds. The lowlands through which the great rivers work their way retain some of their verdure throughout the year, and, especially in the east of the Province, are studded with groves and gardens. But in the plateaux between the rivers, and in the great sandy plains of the south, where cultivation is impossible without the aid of artificial irrigation, the scanty vegetation takes a more sober hue, and the only relief the eye can find from the stretches of bare soil is afforded by stunted and infrequent bushes.

*Geology*¹.
The
plains.

Geologically the Punjab falls into three natural divisions: the plains, the Salt Range, and the Himālayas. The plains consist almost entirely of the Indo-Gangetic alluvium, but contain beds of sedimentary rocks of Peninsular type. These

¹ Condensed from a note by Mr. H. H. Hayden, Geological Survey of India.

comprise a small area of rocks of a transition age, which form a series of outliers of the Arāvalli rocks at Delhi and to the south and south-east, whence they are known as the Delhi system¹. They are composed of a lower group of slates and limestones, and an upper and much thicker group of quartzites; the upper beds, known as the Alwar quartzites, are exposed on the Ridge at Delhi. Two small outliers, also referred to the Delhi system, are found near the Chenāb, at Chiniot and Kirāna, within 35 miles of the beds of extrapeninsular type found in the Salt Range. From the strong contrast they afford in petrological and dynamic conditions, they are almost certainly older than the oldest rocks of that range and in all probability pre-Cambrian.

In the north of the Province the SALT RANGE stretches from the Jhelum valley on the east to the Indus on the west, and crops up again beyond that river. Its geological features are particularly interesting, and the age of the salt which gives its name to the hills is still uncertain. The lowest beds to which a definite period can be assigned are shales, yielding trilobites, *obolus*, and *hyolithes*, and regarded as Lower Cambrian. They are underlain, with apparent conformity, by purple sandstone, which may also be Cambrian. From its apparent position below this sandstone the salt marl has been classed as Lower Cambrian or pre-Cambrian, but it also occurs at various horizons of higher levels. It has no appearance of stratification, but is a soft, structureless mass, showing no signs of sedimentary origin. In it are found immense masses of rock-salt, and bands and strings of gypsum, with disintegrated patches of dolomite. Magnesian sandstone appears to lie conformably on the *obolus* shales, but has yielded only fragmentary fossils. It is, however, probable that this, together with the overlying salt pseudomorph sandstone, belongs to the Cambrian system.

A great break then occurs, representing the Silurian and Devonian and part of the Carboniferous epochs; and the next formation, a boulder-bed, lies unconformably on all the older deposits. It consists of faceted and striated boulders embedded in a fine matrix, giving evidence of a glacial origin: a few fossils are found, including *Conularia*, and the series is regarded as Lower Permian, of the same age as the Tälcher boulder-bed. The Upper Permian is represented by olive and speckled sandstones and lavender clay, containing *Conularia* and other fossils, and the *Productus* beds which yield *Xenaspis* and *Cyclolobus*. Over these are found Lower Triassic beds of

¹ *Manual of the Geology of India*, p. 69 ('The Delhi System').

out, and representatives of all subdivisions in the Alpine Trias have been recognized. The limestones are succeeded by the well-known Spiti shales, famous for their ammonites. They are of Upper Jurassic age, and are overlain by the Giumal sandstone and Chikkim limestone and shales representing the Cretaceous system.

A broad zone of metamorphic, crystalline, and unfossiliferous rocks forms the axis of the Himālayas. The crystallines are partly intrusive, and partly the result of contact with the metamorphism of the Cambrian slates in the northern zone. South of the metamorphics, however, the unfossiliferous sedimentary rocks extend from Chamba through Kāngra and the Simla Hill States to Garhwāl. They consist chiefly of limestones, slates, quartzites, and conglomerates of unknown age, and have been divided into three systems. The Jaunsār system, regarded as the oldest, consists of grey slates overlain by blue limestones, followed by red slates and quartzites exposed near Chakrāta. In Jaunsār-Bāwar and the east of Sirmūr the quartzites are overlain by a considerable thickness of trap and volcanic ash. Above the Jaunsār system a great development of limestones forms most of the higher parts of the mountains running north from Deoban, and is known as the Deoban system. It is also seen in Sirmūr, and in the Shālī peak north of Simla. Above this follows the carbonaceous system, covering the greatest part of the Lower Himālayas. At the base is a great thickness of grey slate, with beds of grit and quartzite, resembling the Cambrian slates of the Tibetan zone. The slates, which are known as the infra-Blaini or Simla slates, are overlain by a characteristic series of conglomerates or boulder-slate and pink dolomitic limestone, which has been recognized in many parts of the Simla Hill States, while similar beds occur near Mussoorie on the east and in Chamba to the north-west. These are overlain by carbonaceous shale, followed by a quartzite bed of variable thickness, the two being included in the infra-Krol group, while the overlying Krol beds consist of limestone with subordinate bands of carbonaceous shale, the limestone attaining a great thickness in the Krol mountain near Solon. The age of the Jaunsār and Deoban systems is quite unknown; the carbonaceous system has been referred in part to the Permian and in part (the Krol limestone) to the Trias, but this classification is not final.

The sub-Himālayan zone consists entirely of Tertiary beds, as a rule abutting against the pre-Tertiary rocks of the central and lower zone. These are comparatively narrow on the east,

Central
and lower
zones.

Sub-Himā-
layan zone.

but gradually widen, till on the north-west they spread over the plains, forming a continuous mantle covering Jhelum and Rāwalpindī Districts, and extending to the northern parts of the Salt Range. The lowest or Sabāthu group consists of grey and red gypseous shales, with subordinate bands of limestone. It is overlain conformably by the Dagshai group, composed of a great thickness of grey sandstones, with bright red nodular clays. These are followed by bright red or purple clays, overlain by sandstones which constitute the Kasauli group. The Sabāthu group yields fossils of Nummulitic age, while no recognizable fossils have been found in the Dagshai, and only plant remains in the Kasauli group; but it is probable that the two last represent the oligocene and lower miocene of Europe. The Upper Tertiary or Siwālik series is separated from all the older beds by one of the most marked structural features of the Himālayas, the main boundary fault, a great dislocation which can be traced for long distances along the lower parts of the range. Sandstones and red clay form the lowest group, being well seen at Nāhan. They are succeeded, often unconformably, by many thousand feet of very soft grey sandstone, with bands of clay. These are overlain by conglomerates which constitute the uppermost portion of the Siwālik series. In the SIWĀLIK HILLS the thickness of the series is at least 15,000 feet. The two upper groups contain great quantities of mammalian remains of pliocene age.

Botany.

The flora falls naturally into four primary divisions: the Himālayas, the submontane belt from the Jumna to the Rāvi, the plain proper, and the Salt Range on both sides of the Indus with connected country in the north-west of the Province.

Himā-
layas.

The Himālayan tract includes the basin of the Sutlej, from the Tibetan border at Shipki to the hill station of Kasauli in Ambāla District; the basins of the Beās and Rāvi, from their sources to the submontane tracts of Kāngra and Gurdāspur; the basins of the Chandra and Bhāga, which unite to form the Chenāb, from the high watershed that divides their sources from the Indus valley to the eastern borders of Kashmīr and Jammu; and a promontory bounding the Kashmīr valley on the south, and culminating in the station of Murree about 6,500 feet above sea-level.

The Sutlej basin is again divided into two well-marked portions, of which the outer includes Simla District and adjoining Hill States, with Kasauli. The trees and shrubs of this portion, to about 6,000 feet, are mainly subtropical; but

above this is a temperate belt which begins, roughly speaking, at Simla, and is rich in familiar European forest trees, such as yew, pines, oak and holly, elm, a horse-chestnut, several sorts of spindle-tree and buckthorn, and, among humbler growths, crowfoots, columbines, anemones, cresses, violets, stitchworts, cranesbills and St. John's worts, brambles, roses, spiraeas and wild strawberries, woodbines, guelder-rose and ivy, bell-flowers, gentians, Solomon's seal, meadow-rush, and herb-paris. The *Flora Simlensis* of the late Sir Henry Collett (edited by Mr. W. B. Hemsley) takes in only a part of the Simla Hills, but it describes 1,236 species of flowering plants, a number somewhat less than that of the native plants of the British Islands. The component elements, however, differ materially from those of any European flora, for, apart from the sub-tropical contingent, the Outer Himālayas preserve many forms allied to the plants of north-eastern Asia (e.g. *Hydrangea*), as well as Indo-Malayan types. The *deodār*, which flourishes near Simla, is related to the cedars of the Lebanon and the Atlas. East of Simla the rivers drain into the Jumna, and not towards the Sutlej, but as a matter of convenience certain petty States south-east of Bashahr and the territories of Sirmūr are grouped with the Simla area. In this tract the Chaur mountain, rising almost from the plains to over 12,000 feet, shows successive zones of vegetation, from the almost tropical valleys at its southern base to birch forest and subalpine pastures near its summit.

The upper portion of the Sutlej basin within Indian limits—that is to say, Kanāwār and the Spiti valley, with Lāhul and Pāngi, both drained by the Chenāb—constitutes a mainly alpine field of huge extent and great elevation. The flora is most closely linked with the vegetation of Western Tibet and Middle Asia, and includes few trees and very little forest. A pine, which is also found in the mountains of Afghānistān, extends to the lower levels of the inner Chenāb basin; but, except in Pāngi, a small pencil-cedar, stunted junipers, a few scattered birches, with pollard willows grown from saplings planted by the watercourses, complete the list of trees for this portion of the Punjab Himālayas.

Crossing outwards again to the basins of the Beās and Rāvi, the Kulū valley and the higher glens of Chamba present a far more varied and luxuriant aspect to the forester or botanist. The trees are mainly those of the Simla country; but certain shrubs and herbs reappear that are rare or absent in the Sutlej valley, owing doubtless to its greater indraught from the heated

sands of the Punjab and Northern Rājputāna. On the other hand, some West Asian types—for example, the wild olive and the Oriental clematis—are found in the drier parts of Kulū more abundantly than to the eastward, while a few European forms, e.g. the great spearwort and the purple loosestrife, find their eastern limit in the Beās valley. The hill stations of Dalhousie and Dharmśāla come within this area. Epiphytic orchids, which are missing from the Simla country except very locally, reappear near Dharmśāla, but do not pass west of the spurs that divide the Kāngra ranges from the basin of the Rāvi.

The Murree hills, which are separated from the Rāvi country by a long stretch of the Outer Himālayas lying within Jammu territory, differ considerably owing to the presence of a stronger West Asian element in their flora.

Sub-
montane
tract.

The submontane belt is practically restricted to the Districts of Ambāla (with its adjoining States), Hoshiārpur, and Kangra. The *sāl* tree, which is not found elsewhere to the west of the Jumna, survives in a single *dūn* (or strath) connected with the Kāngra valley, but actually within the northern border of Hoshiārpur District. The Kiārda Dūn in Sirmūr State and the Kalesar forest in Ambāla shelter a number of species that are characteristic or abundant in the Siwālik tract east of the Jumna, though unknown or rare farther westward.

Plains.

The plain has also its subdivisions, which are, on the whole, even better marked than those of the Himālayas, an important influence being exercised by the climate of the Great Indian Desert which borders the whole southern limit of the Province, and sends out two arms which embrace the actual country of the five¹ rivers. That on the east takes in a great part of the Phūlkiān States, its apex being near the town of Ludhiāna, on an ancient bed of the Sutlej. The western arm (locally known as the Thal) extends from the Sind border up the Indus valley to the south-west angle of the Salt Range. The eastern chain of sandhills and alternating barriers has of late, however, lost much of its desert character through canal extensions. From Ludhiāna to the Jumna valley, and along the Jumna to the neighbourhood of Delhi, the country is substantially a portion of the great Gangetic plain, though some interesting peculiarities present themselves: a crowfoot (best known from North-Eastern America) occurs, also a rose which is elsewhere most abundant in the swamps of Eastern Bengal, and a kind of scurvy-grass (*Cochlearia*), a genus usually

¹ The Beās, Rāvi, Chenāb, Jhelum, and Indus. The Sutlej is included in Hindustān, of which at the same time it forms the traditional boundary.

partial to far colder latitudes. The south-east portions of the Province, and the upland tract skirting the western valley of the Jumna, present certain features of the Deccan flora, merging ultimately in the Arāvalli system. Trees in the extreme south-east are few, and mostly of Arabian or North African affinity. Similar forms, though seldom reaching the dimensions of a tree, characterize the southern fringe of the Punjab; but towards the Indus, a West Asian or indeed European element becomes prominent, in the case especially of those field annuals which come up each winter with the crops of the season: such as poppy, fumitory, rockets, catchfly, spurrey, chickweed, vetches and trefoils, thistles, blue pimpernel, bindweed, toadflax and veronicas, broomrape, goosefoots, milkspurges, asphodel and others.

Between the desert and the Indus the *doābs* bounded by the great rivers presented formerly a succession of alkaline wastes, often covered with low bushes of the saltwort tribe, or untilled expanses dotted with a scrub of thorny bushes of the *Acacia* family and of *van* (*Salvadora*, a desert representative of the olive), with an occasional row of tamarisks near a creek or waterhole, relieved in the autumn by a short-lived flush of climbing plants, and in good seasons by an abundant crop of grasses, which afforded coarse but invaluable pasture to the cattle of the nomad population. Canal extension and systematic state colonization are now changing all this rapidly, and the flora is approximating to the general spring and autumn series of agrestal species of Northern India, though a strong West Asian admixture maintains itself. Beyond the Indus, in Dera Ghāzi Khān District, this 'Oriental'¹ element begins to predominate, even as regards shrubs and perennials; and it continues northwards to the Salt Range and the hills near Attock, where several types common to the Orient and the Mediterranean, e.g. pinks and larkspurs, may be gathered at less than 2,000 feet above sea-level.

Himālayan forms are still prevalent in the Salt Range, especially at the higher levels. On the north face of the culminating summit (Sakesar), at about 4,800 feet above the sea, there are a few oaks, of a common North-West Himālayan species, while herbaceous plants of the same region intermingle with trans-Indus representatives; but the slopes abound with box-trees, olives, and other Western forms. The herbs and grasses, moreover, although Indian forms abound, include

¹ The region from the Mediterranean to the Indus, and between the Red Sea and the Steppes, is thus termed by botanists.

a decided proportion of more Western types ; but, owing to the dryness of the climate, these are usually such as characterize the arid zone that extends on the west through Africa to the Atlantic Islands.

Wild
animals.

Until the beginning of the nineteenth century both lions and tigers appear to have been common, and the Nardak of the Eastern Punjab was a favourite hunting ground of the Mughal emperors. As late as 1827 Major Archer says that lions were sometimes seen within 20 miles of Karnāl, while tigers were exceedingly numerous in its immediate vicinity ; and in the neighbourhood of Sirsa and in other parts of the Punjab tigers were abundant until past the middle of the nineteenth century. Lions are now entirely extinct and tigers practically so, though occasionally a straggler from the Arāvalli Hills is found in the South-East Punjab, or one from the eastern Tarai in Nāhan or Ambāla. Another animal practically extinct in the Punjab is the wild elephant, though it is occasionally met with in Nāhan and Ambāla. The only common representatives of the feline tribe are the leopard, the hunting leopard, and wild cat, with the lynx, along the southern border ; the leopard is chiefly found in the hills. Two kinds of bear, the black and the brown, are found in the hills ; hyenas and wolves are seen in most Districts, but are not common ; jackals and foxes on the other hand abound. Ibex and *bharal* are found in the Higher Himālayas, and lower down musk deer, barking-deer, and wild goats ; in the Salt Range the *uriāl* (*Ovis vignei*) is not uncommon. In the plains antelope are plentiful, especially in the east and south of the Province, and *nīlgai*, 'ravine deer' (*chinkāra*), and hog deer (*pārha*) are common in places. The wild hog, badger, porcupine, and hare are found in most parts. The grey ape (*langūr*) lives in the hills, and monkeys abound, both in the hills and in the canal-irrigated Districts. The otter and river porpoise are found in all the rivers.

Birds.

Peafowl are plentiful, and so is the lesser bustard ; the great bustard is less common. Flocks of sand-grouse (imperial painted, pallas, and pintail) are frequently seen in the dry tracts. The grey partridge is found everywhere, and the black partridge is occasionally met with ; in the hills the *chikor* (*Caccabis chukor*) and *sist* (*Ammoperdix bonhami*) partridges are common, and the snow partridge is found at high elevations. All the Indian pheasants are found in the Himālayas, including the argus, *monal*, *koklas*, *chir*, and white-crested pheasant. Bush-quail and rain-quail are found in the plains, and the common grey quail comes in hosts at the ripening of the

wheat. In the winter large numbers of waterfowl visit the rivers and *jhils*. The most common ducks are the sealing-wax bill, pintail, mallard, pinkhead, shoveller, teal, and goose teal; geese, cranes, flamingoes, pelicans, ibises, herons, bitterns, snipe are all also more or less plentiful. The crow, vulture, and kite are ubiquitous, and the adjutant bird is occasionally met with. Hawks of various species are found, and often fetch high prices for sporting purposes. Green parrots fill the air with their screeching in the irrigated tracts, the golden oriole sometimes flashes through the trees, and the blue jay and woodpecker lend a frequent note of colour to the scene. Immense flocks of rosy pastors visit the plains in the hot season, and the *maina* is common everywhere in the neighbourhood of houses.

The sharp-nosed or fish-eating crocodile (*ghariyāl*) is found in all the great rivers, and the blunt-nosed crocodile or *magar* (*Crocodilus palustris*) is also met with in the lower reaches. The poisonous snakes are the *karait*, cobra, *Echis carinata* (*kappa*), and, in the east of the Province, Russell's viper. Lizards of various kinds are common. The commonest fish are the *rohu* (*Labeo rohita*) and mahseer, the latter of which runs up to 50 lb.

Reptiles
and fish.

Locusts sometimes arrive in swarms, chiefly from the south-west, and do considerable damage. White ants attack timber and garnered grain, which is also much subject to injury from weevils. Mosquitoes abound, and with sandflies combine to make life a burden in the hot season; and house-flies swarm, especially towards the beginning and ending of winter. Scorpions and centipedes are numerous, but not much seen. The honey-bee, hornet, and wasp are common, and the firefly's flashing light is to be seen wherever there is irrigation.

Insects.

Over the greater part of the Punjab the climate is of the most pronounced continental character, extreme summer heat alternating with great winter cold; but its diversified surface, including montane, submontane, and plains zones, modifies very largely the temperature, weather, and climate in different parts of the Province. The Punjab has accordingly been divided into four natural divisions, in each of which the general meteorological conditions are believed to be fairly homogeneous. These are the Himālayan (stations, Simla and Murree), the sub-Himālayan (stations, Ambāla, Ludhiāna, Siālkot, and Rāwalpindi), the Indo-Gangetic Plain West (stations, Delhi and Lahore), and the north-west dry area (stations, Khushāb, Montgomery, Multān, and Sirsa).

Meteor-
ology.

oppressively hot and sultry weather, when the rain ceases or only falls as scattered showers. These conditions continue with greater or less intensity till the second or third week of September, when, with not infrequently a second outburst of violent thunderstorms, the rains cease and fine weather commences.

Storms and cyclones. Severe cyclonic storms are practically unknown in the Punjab. Hailstorms are fairly frequent, especially in March and April, and often cause considerable damage to the crops.

Floods. Although the Province is traversed or bounded by seven large rivers, it is not to any serious extent subject to inundations from them, and it is only in the comparatively narrow riverain belts bordering the channels of the rivers that floods do serious harm. An exception to this generalization is to be found in the extreme south-west, where parts of the Districts of Dera Ghāzi Khān, Muzaffargarh, and Multān, bordering on the Chenāb and Indus, are low enough to be subject to frequent inundations even during the passage of normal floods. Protection is afforded by the erection of dikes, but they are not always sufficiently strong to resist a heavy spate. Nearly all the high floods of which records exist have occurred in July or August, when the summer monsoon is at its height. The earliest of these was in 1849, when the town and civil station of Shāhpur were washed away by the Jhelum. In 1856 and in 1878 the Indus rose very high, and on both occasions the towns of Muzaffargarh and Dera Ghāzi Khān were flooded out and large portions of the Districts submerged. In 1892, 1893, and 1905 the Chenāb and the Jhelum were heavily flooded, and in the second of these years the Kohāla suspension bridge on the Kashmīr road was carried away. The great Indus flood of 1878 is said to have been in part the result of heavy landslips in the hills.

Earth-quakes. Throughout the period over which authentic records of Indian earthquakes extend, the Punjab has repeatedly suffered from the effects of seismic disturbances of greater or less intensity. This is due to the presence of important lines of weakness in the earth's crust, caused by the stresses involved in the folding of the Himālayas and resulting in the development of faults. The most important of these is that known as the 'main boundary fault,' which runs through the Lower Himālayas from end to end of the Punjab. Along these lines readjustments of the equilibrium of the crust are constantly taking place, and when these readjustments are irregular or spasmodic the movement results in an earthquake. Such

earthquakes as are due to this cause are naturally most severe in the neighbourhood of the fault. A striking exemplification is to be found in the Kāngra earthquake of 1905. About 20,000 human beings perished in this catastrophe, which ranks as one of the most disastrous of modern times. The loss of life occurred principally in the Kāngra valley, Dharmśāla, Mandī, and Kulū, but the shock was perceptible to the unaided sense throughout an area of some 1,625,000 square miles. Although this most recent catastrophe dwarfs all earthquakes previously recorded in the Province, those of 1803, 1827, 1842, and 1865 were of considerable severity.

The Punjab was undoubtedly the seat of the earliest Aryan settlements in India, and the Rīg-Veda was probably composed within its borders. In one of its finest hymns the Vipāsa (Beās) and Sutudrī (Sutlej) are invoked by the sage Visvāmitra to allow the host of the Bharatas to cross them dryshod. And in the later Vedic period the centre of Aryan civilization lay farther to the south-east, between the Sutlej and the Jumna, in the still sacred land of KURUKSHETRA round Thānesar, the battle-field of the Mahābhārata, while Indrapat near Delhi still preserves at least the name of Yudhishthira's capital, Indraprastha. For a brief period after 500 B.C. part of the Punjab may have formed a Persian province, the Indian satrapy conquered by Darius, which stretched from Kālābāgh to the sea, and paid a tribute of fully a million sterling.

History.
Early
period.

In invading the territories east of the Indus Alexander yielded to mere lust of conquest, for they no longer owed allegiance to the Persian empire. In 326 B.C. he crossed the river at Ohind or Und, invading thereby a dependency of Porus (Paurava), whose kingdom lay in the Chaj Doāb. The capital of this dependency was Taxila (Sanskrit, Takshasilā), now the ruins of Shāhdheri, but then a great and flourishing city, which lay three marches from the Indus. Its governor, Omphis (Ambhi) or Taxiles, was in revolt against Porus, and received the Macedonians hospitably. Leaving Philippus as satrap at Taxila, Alexander, reinforced by 5,000 Indians under Taxiles, marched to the Jhelum (Hydaspes), where he found Porus prepared to dispute his passage of the river, probably near Jhelum town. Alexander, however, turned his enemy's right flank by crossing higher up, and defeated him with great loss. Porus himself was captured, but soon admitted to alliance with the Macedonians and granted the country between the upper reaches of the Jhelum and Chenāb (Bhimbar and Rājauri). His nephew, also named

Alexander.

Porus, ruler of Gandaris (possibly the modern Gondal Bār, between the Chenāb and the Rāvi), had already tendered his surrender; but the Macedonians crossed the Chenāb and drove him across the Rāvi. Here, in the modern District of Amritsar or Gurdāspur, Pimprama, the capital of the Adraistoi, surrendered to Alexander, and he then invested Sangala, the capital of the Kathaians. Having taken it by assault he advanced to the Beās; but his soldiers being reluctant to cross that river, he erected twelve massive altars on its bank to mark the eastern limits of his invasion, and returned to the Jhelum, making Porus governor of all the conquered country west of the Beās.

At his newly founded city of Bucephala (? Jhelum), Alexander now prepared a flotilla to sail down the Jhelum and the Indus to the sea. Starting late in October, 326 B.C., the Macedonians marched in two divisions, one on either side of the river, Alexander himself with some of the troops sailing in the fleet, which numbered nearly 2,000 vessels, great and small. At the capital of Sophytes (probably Bhera) he was joined by Philippos, and thence hastened to invade the territories of the Malloi and Oxydrakoi, two powerful tribes which held the country south of the confluence of the Jhelum with the Chenāb. The strongholds of the former soon fell, as did a Brāhman city (? Atari or Shorkot); but the capital of the Malloi offered a desperate resistance, and had to be carried by assault, in which Alexander himself was wounded. The Malloi and Oxydrakoi now submitted, and the satrapy of Philippos was extended to the confluence of the Chenāb with the Indus, including the Xathroi and Ossadiroi tribes. At the confluence of these rivers Alexander founded a city, possibly the modern Uch Sharif, and thence sailed on down the Indus to the capital of the Sogdoi, where he fortified another city, constructed dockyards, and repaired his ships. His voyage now lay through the kingdom of Mousicanus, corresponding to the modern Sind.

His

SUCCESSORS.

Alexander thus made no attempt to hold the Punjab east of the Jhelum. That country he designed to make a dependent kingdom under Porus, while Philippos governed the Sind-Sāgar Doāb as satrap. This arrangement, however, did not endure. In 324 Philippos was murdered by his mercenaries, and no successor was appointed, Eudamus and Taxiles being ordered to carry on the administration. After Alexander's death Porus ousted Peithon from Sind, and in revenge Eudamus decoyed him into his power, and murdered him six

years later. His execution was the signal for a national revolt against the Macedonian power. Eudamus withdrew with his Greek garrison, and Chandragupta (Sandrocottus), the Mauryan, made himself master of the Punjab and the lower Indus valley. Himself a native of the Punjab, Chandragupta organized the predatory tribes of the north-west frontier against the Greeks. His mastery of the Punjab enabled him to conquer Magadha; and when, about sixteen years later, in 305 B.C., Seleucus Nicator, king of Syria, marched into India to recover Alexander's Indian conquests, he was content to cede to Chandragupta even the territory west of the Indus, and to give him a daughter in marriage. Under his son Bindusāra and his grandson Asoka, Buddhism became the state religion of the Punjab, as is shown by the pillar erected at Topra and by the Buddhist remains at SUI VERĀR, in the Bahāwalpur State, and in the Kāngra valley. Under the Mauryan dynasty Taxila remained the capital of the great viceroyalty, which extended from the Sutlej to the Hindu Kush, and probably included Sind. After Asoka's death Euthydemus, who had usurped the Graeco-Bactrian throne, extended the Greek power in India. In 205 or 206 Antiochus III of Syria acknowledged his independence, and then crossed the Paropamisus into India and made a treaty with Sophagasenas (Subhāgasena), returning to Syria in the following year. Ten years later, in 195 B.C., Demetrius, son of Euthydemus, reduced the Punjab, rebuilt Sagala, which he renamed Euthydemia, and extended his conquests so far that Justin calls him 'King of the Indians.' But while engaged in these conquests he lost Bactria, and his successors appear to have ruled only over the Western Punjab and the Kābul valley; but little is known about them until Menander raised the Graeco-Bactrian power to its zenith in India. According to Plutarch, Menander's territories extended to the Nabadā and Indus delta. But this great kingdom was doomed, as we shall so often find its successors were doomed, to fall before barbarian invasion from the west.

By 100 B.C. Maues or Moga, king of the Sakas, a tribe expelled from Sogdiana by the Yueh-chi, founded a kingdom in the North-West Punjab, with its capital at Taxila, which endured for about seventy years. This kingdom was overrun by Kozula Kadphises, the chief of the Kushan tribe of the Yueh-chi. He also destroyed the last Greek principality in India, and his son Wemo Kadphises (Himakapisa) had extended his sway all over north-western India by A.D. 10¹. About

Sakas and
Kushans.

¹ The date of the Kushans is still in dispute.

A.D. 25, however, we find a Parthian satrapy established in Afghānistān and Northern India, with Gondophares, the Gundoferus of St. Thomas's mission, as its founder. The Parthian power was short-lived, for by A.D. 78 the Kushans had recovered their supremacy in the person of Kanishka, under whom the so-called Scythian power reached its zenith. He was succeeded by Hushka (Huvishka) and Jushka (Vāsudeva). Under the latter the Kushan dominions shrank to the Indus valley and Afghānistān; and the dynasty was then supplanted by Ki-to-lo, chief of the Little Yueh-chi, and he in turn by the Ephthalites or White Huns about the middle of the fifth century. Under Toramāna and his son Mihirakula these Huns held Northern India, Sagala being their capital. The latter is doubtless the great Mihirakula of the *Rājatarangini*, who lost his empire in Central India and gained the kingdom of Kashmīr, retaining probably the Punjab until his final overthrow at Karor in 544, after the Ephthalite power had endured for a century. Space precludes any detailed account of the religious history of the Punjab after Asoka made Buddhism its state religion; but the coins of the Kushan kings bear effigies of Zoroastrian, Greek, and Hindu divinities, while Mihirakula's persecution of the Buddhists was terrible in its severity, a policy which probably contributed to his downfall. At all events, Buddhism was now on the decline.

In the latter half of the sixth century arose the great kingdom of THĀNESAR. This, however, included only the Punjab east of the Jhelum river; for in the middle of the seventh century Hiuen Tsiang, the Chinese pilgrim, found Taxila and Singhapura in the Salt Range dependent on Kashmīr, while the Central Punjab from the Indus to the Beās formed the kingdom of Tseh-kia, whose capital lay near Sākala, and to which Multān was a subject principality. Early in the eighth century Thānesar ceased to exist as a great kingdom, and the Tomar dynasty of Kanauj established itself in the South-East Punjab, where it held Hānsi and founded Delhi. After a century's dominion, the Tomars were supplanted by the Chauhāns of Ajmer in 1151.

The Muhammadan
invasions.

The Muhammadan conquerors of India invaded the Punjab by two distinct routes. As early as the year 38 of the Hijra the Khalifa Ali had appointed governors to the frontiers of Hind, and six years later, in A.D. 664, a Muhammadan general penetrated to Multān. This inroad, however, resulted in no permanent conquest; and the first real invasion occurred in 712, when Muhammad bin Kāsim, another of the Khalifa's

generals, conquered Sind and took Multān, which then lay on the north bank of the Rāvi, in the dominions of Dāhir, ruler of Sind. He made Multān the base of farther inroads, and garrisoned Bramhapur on the Jhelum, the modern Shorkot, Ajtahād, and Karor; and afterwards, with 50,000 men, he marched via Dipālpur to the foot of the Himālayas near Jhelum. But his ill-deserved execution prevented a farther advance; and it was not till some years later that the whole province of Multān was reduced, and the part of the Punjab dependent on Kashmīr subdued.

By 871 the power of the Khalifate was on the decline, and Multān became an independent and prosperous kingdom under an Arab dynasty. The rest of the Punjab was divided among Hindu kings, the Brāhman dynasty of Ohind probably holding the Salt Range, while as early as 804 Jālandhara or Trigarta was an established kingdom.

More than a century elapsed before the Muhammadan advance was resumed, and Ghazni now becomes its base. In 979 Jaipāl, king of Lahore, advanced on Ghazni to encounter Sabuktāgin, its Amīr, at Laghmān, but effected a treaty and retired, only to be defeated there nine years later, in 988. Jaipāl was then in alliance with the kings of Delhi, Ajmer, Kālinjar, and Kanauj; and his defeat was decisive, as he had to surrender four strongholds towards Ghazni, and Sabuktāgin occupied the country up to the Indus. Shaikh Hāmid, the Afghān governor of Multān, also did homage to him. Sabuktāgin was succeeded by the renowned Mahmūd of Ghazni, who in 1001 commenced a series of inroads into India. In the first, Jaipāl was defeated near Peshāwar, and, having burnt himself to death, was succeeded by his son Anand Pāl. The latter allied himself with the governor of Multān, Abul Fatch Lodī, but was also defeated at Peshāwar in 1006, whereupon Multān was reduced. In 1009 Anand Pāl, who had formed a great coalition of Hindu rulers, including those of Ujjain and Gwalior, met with his second defeat near Peshāwar, after which Mahmūd sacked Nagarkot or Kāngra. Nevertheless in 1010 Mahmūd had again to subdue Multān, where the Karmatian heretics had revolted, and deport its Lodī governor. In 1014 he reduced Nandana, a fastness in the Salt Range, driving Trilochan Pāl, Anand Pāl's son and successor, to seek an asylum in Kashmīr; and in the same year he plundered Thānesar. The subjugation of the greater part of the Punjab was hardly completed before 1021, when Trilochan Pāl was defeated again and slain. It was left, however, to Masūd, son

Mahmūd
of Ghazni.

recognition from the Abbassid Khalifa of distant Egypt, though he ruled an independent kingdom as wide as that of Aurangzeb. Nevertheless his power was built on sand. The Afghāns, who now appear for the first time on the north-west frontier, overwhelmed Multan in 1343. Even the country round Sunām and Sāmāna was in open revolt, and the Gakhars seized Lahore. Eventually Muhammad bin Tughlak died of fever in 1351 while on an expedition in Sind, leaving the kingdom to his cousin the noble Fīroz Shāh III. With this king's accession the modern history of the Punjab begins to take shape. He dug canals, notably that from the Jumna, and founded Hissār. Sirhind was colonized and became a separate government. Nagarkot (Kāngra) was taken, and Sirmūr and the hills north of Ambāla were subdued.

Fīroz Shāh reigned for thirty-seven years and was succeeded, *Anarchy.* after the usual interlude of anarchy, by Muhammad Shāh III in 1390. Mewāt, however, was in revolt and the Khokhars under Shaikha seized Lahore. Prince Humāyūn was about to march against them, when his father's death recalled him to the throne, and the rebellion had to be put down by Sārang Khān, feudatory of Dipālpur, in a regular campaign in 1394. By 1395 the empire had fallen into chaos. Rival puppet Sultāns waged war on one another from their opposing capitals at Delhi, while Sārang Khān attacked Multān on his own account. On this scene of disunion the Mongols reappeared in force. In 1397 Pir Muhammad laid siege to Uch, Sārang Khān's fief, defeating a relieving force, and also invested Multān, which surrendered in 1398, and thus paved the way for Timūr's great inroad of that year. Crossing the Indus south of the Salt Range, Timūr plundered Talamba in September, and advanced via Ajodhan to Bhatner. Thence his march lay through Fatehābād, Tohāna, across the Ghaggar, through Kaithal and Pānīpat to Delhi, which he sacked on December 26. Crossing the Jumna he attacked Hardwār, and recrossing the river in January, 1399, defeated Ratn Sain (probably the Rājā of Sirmūr) in the Kiārda Dūn, advanced through the Siwālīks, took Nagarkot and Jammu, and encamped at Bannu early in March. In this incredible march Timūr massacred men, women, and children by tens of thousands, and reduced the country along his route to ruin. It is, however, a consolation to read that he killed some thousands of Jats near Tohāna because they were given to robbing travellers. The only immediate result of his inroad was to reinstate Khizr Khān in possession of Multān, which Sārang Khān had wrested from him. On his departure the

struggle for Delhi recommenced, with the added miseries of pestilence and famine. The Punjab fiefs remained virtually independent, and indeed Delhi never regained her ascendancy until Bābar founded the Mughal dynasty.

Saiyids and
Lodis.

Eventually in 1414 Khizr Khān, who had been practically master, not only of Multān, but of the whole Punjab since Timūr's departure, took Delhi and founded the Saiyid dynasty, which owned a nominal allegiance to the Mongols. But the four Saiyid rulers were as weak as those whom they had supplanted. The Mongol governor of Kābul exercised a fitful control over the Punjab, which was in constant revolt under its Turk and Khokhar feudatories. Again, the necessity for a strong warden of the marches compelled Muhammad Shāh IV to entrust Dipālpur and Lahore to Bahlol, a Lodi Afghān, in 1441, but Bahlol soon patched up peace with the Khokhars, and in 1451 took Delhi and founded the first Pathān dynasty. Multān had become an independent kingdom in 1443. Under the Lodis the Punjab enjoyed such peace as a country no longer worth plundering might enjoy. The period is remarkable for a popular religious revival, for it produced Nānak (1469–1538), the founder of Sikhism.

Mughals
and Sūris.

In 1526 Bābar, a fugitive king of Samarkand, defeated Ibrāhīm, the Lodi king of Delhi, at Pānīpat, and thus established the Indian empire of the Mughals. As usual, disunion and disaffection had led to the ruin of the Afghān domination. Daulat Khān, himself a Lodi, governor of the Punjab, sought the aid of Bābar, then king of Kābul, against his kinsman, and enabled him to seize Lahore in 1524, when he established Alā-ud-dīn, Daulat Khān's uncle, as 'Sultān' at Dipālpur. Daulat Khān, now alarmed for his own safety, raised a force to oppose Bābar, who had returned to recruit fresh troops in Kābul, but offered little resistance; and Bābar, having seized his stronghold in the Siwāliks, marched down the Jaswān Dūn, crossed the Sutlej, and overthrew Ibrāhīm at Pānīpat in April, 1526. Bābar spent the last years of his life in establishing his rule in India from the capital at Agra, and on his death at the age of forty-eight, Humāyūn succeeded him in 1530. But Kāmran, Bābar's second son, promptly annexed the Punjab, and, though the Afghān power was still far from crushed, Humāyūn frittered away his power in a futile conquest of Gujarāt. In 1540 Sher Shāh drove him out of India, through the Punjab and into the desert country near Uch, whence he fled to Persia. Sher Shāh held effective control of the Punjab, building Rohtās in Jhelum District to overawe the

the Jumna at Delhi. His reign was the most prosperous period of Mughal rule, a period of profound internal peace and immunity from foreign invasion; but it was, none the less, marked by military activity beyond the frontiers. Kandahār was seized in 1639, only to be lost again ten years later; and the great expeditions of 1652, commanded by the princes Aurangzeb and Dārā Shikoh, failed to recover it. The successes of the imperial army in Balkh and Badakhshān in 1644 were neutralized by the disastrous retreat conducted by Aurangzeb through the passes of the Hindu Kush, but the expedition against Baltistān in 1651 was crowned by the capture of Skārdo. A dangerous illness which prostrated the emperor in 1657 was the signal for the outbreak of strife among his sons. After his defeat near Agra, Dārā fled to the Punjab, trusting to his popularity with the people of the province to gain him adherents. In this he was not altogether disappointed; but the restless activity of his brother compelled him to fly, and in the following year he was captured and put to death at Delhi.

Aurangzeb. The reign of Aurangzeb dates from June, 1658, though his father survived in confinement at Agra till 1666. It was one long struggle against the powers of the South. In the Punjab the profound peace which the province had known under Shāh Jahān continued for half a century under his successor, broken only by the march of the imperial armies through the province in 1673-5 to crush the Afghān revolt, and by the insurrection of the Satnāmīs of Nārnaul in 1676. The war with the Afghān tribes dragged on for two years, and was only brought to a close by a treacherous massacre at Peshāwar. The insurrection of the Satnāmīs infected the Hindu population of Agra and Ajmer. Detachments of the imperial army were defeated, and the insurgents advanced on Delhi. A panic spread throughout the army, and it was with difficulty that the soldiers could be brought to face the enemy. Confidence was restored by the personal exertions of the emperor, and a crushing defeat was inflicted on the insurgents. In the closing years of Aurangzeb's reign signs were already visible that the downfall of the empire was not far distant, and the century after his death in 1707 saw the rise of a new power in the Punjab.

Sikhs.

This power was the Sikhs, originally a mere religious sect, founded by Bāba Nānak, who was born near Lahore in the latter half of the fifteenth century, and who died at Dera Nānak, on the Rāvi, in 1538. A full account of the sect will be found in Prinsep's *History of the Punjab* (2 vols., 1846) and Cunningham's *History of the Sikhs* (second edition, 1853), to

which works the reader is referred for a complete or detailed narrative. *Bābā Nānak* was a disciple of *Kabīr*, and preached as a new religion a pure form of monotheism, eagerly accepted by the peasantry of his neighbourhood. He maintained that devotion was due to God, but that forms were immaterial, and that Hindu and Muhammadan worships were the same in the sight of the Deity. His tenets were handed down by a succession of *Gurūs* or spiritual leaders, under whom the new doctrine made steady but peaceful progress. *Rām Dās*, the fourth *Gurū*, obtained from *Akbar* a grant of land on the spot now occupied by the city of *AMRITSAR*, the metropolis of the Sikh faith. Here he dug a holy tank, and commenced the erection of a temple in its midst. His son and successor, *Arjun Mal*, completed the temple, and lived in great wealth and magnificence, besides widely increasing the numbers of his sect, and thus exciting the jealousy of the Mughal government. Becoming involved in a quarrel with the imperial governor of *Lahore*, *Arjun* was imprisoned in that city, where he died, his followers asserting that he had been cruelly put to death.

‘This act of tyranny,’ writes *Elphinstone*, ‘changed the Sikhs from inoffensive quietists into fanatical warriors. They took up arms under *Har Govind*, the son of their martyred pontiff, who inspired them with his own spirit of revenge and of hatred to their oppressors. Being now open enemies of the government, the Sikhs were expelled from the neighbourhood of *Lahore*, which had hitherto been their seat, and were constrained to take refuge in the northern mountains. Notwithstanding dissensions which broke out among themselves, they continued their animosity to the *Musalmāns*, and confirmed their martial habits until the accession, in 1675, of *Gurū Govind*, the grandson of *Har Govind*, and the tenth spiritual chief from *Nānak*. This leader first conceived the idea of forming the Sikhs into a religious and military commonwealth, and executed his design with the systematic spirit of a Grecian lawgiver.’

But their numbers were inadequate to accomplish their plans of resistance and revenge. After a long struggle, *Gurū Govind* saw his strongholds taken, his mother and his children massacred, and his followers slain, mutilated, or dispersed. He was himself murdered in 1708 by a private enemy at *Nander* in the *Deccan*. The severities of the *Musalmāns* only exalted the fanaticism of the Sikhs, and inspired a spirit of vengeance, which soon broke out into fury. Under *Gurū Govind*’s principal disciple, *Banda*, who had been bred a religious ascetic, and who combined a most sanguinary disposition with bold and daring counsels, they broke from their

retreat, and overran the east of the Punjab, committing unheard-of cruelties wherever they directed their steps. The mosques were destroyed and the Mullās killed; but the rage of the Sikhs was not restrained by any considerations of religion, or by any mercy for age or sex. Whole towns were massacred with wanton barbarity, and even the bodies of the dead were dug up and thrown out to the birds and beasts of prey. The principal scene of these atrocities was Sirhind, which the Sikhs occupied, after defeating the governor in a pitched battle; but the same horrors marked their route through the country eastward of the Sutlej and Jumna, into which they penetrated as far as Sahāranpur. They at length received a check from the local authorities, and retired to the country on the upper course of the Sutlej, between Ludhiāna and the mountains. This seems at that time to have been their principal seat; and it was well suited to their condition, as they had a near and easy retreat when forced to leave the open country. Their retirement on the present occasion was of no long continuance; and in their next incursions they ravaged the country as far as the neighbourhood of Lahore on the one side and of Delhi itself on the other.

The emperor himself, Bahādur Shāh, was compelled to return from the Deccan in order to proceed against the Sikhs in person. He shut them up in their hill fort at Daber, which he captured after a desperate siege; the leader Banda and a few of his principal followers succeeded by a desperate sally in effecting their escape to the mountains. The death of Bahādur Shāh in 1712 probably prevented the extermination of the sect. During the dissensions and confusion which followed that event the Sikhs were allowed to recruit their strength, and they again issued from their mountain fastnesses and ravaged the country. In 1716, however, Abdus Samad Khān, governor of Kashmir, was dispatched against them at the head of a large army by the emperor Farrukh Siyar. He completely defeated the Sikhs in several actions, took Banda prisoner, and sent him to Delhi, where he was barbarously put to death along with several other of the Sikh chieftains. An active persecution ensued, and for some time afterwards history narrates little of the new sectaries.

Invasions.

In 1738 Nādir Shāh's invading host swept over the Punjab like a flooded river, defeated the Mughal army at Karnāl in 1739, and sacked the imperial city of Delhi. Though Nādir retired from India in a few months with his plunder, he had given the death-blow to the weak and divided empire. The

Sikhs once more gathered fresh courage to rebel; and though again defeated and massacred in large numbers, the religion gathered new strength from the blood of the martyrs. The next great disaster of the Sikhs was in 1762, when Ahmad Shāh Durrāni, the Afghān conqueror of the Marāthās at Pānīpat in the preceding year, routed their forces completely, and pursued them across the Sutlej. On his homeward march he destroyed the town of Amritsar, blew up the temple, filled the sacred tank with mud, and defiled the holy place by the slaughter of cows. But, true to their faith, the Sikhs rose once more as their conquerors withdrew, and they now initiated a final struggle which resulted in the secure establishment of their independence.

By this time the religion had come to present very different features from those of Bāba Nānak's peaceful theocracy. It had grown into a loose military organization, divided among several *misl*s or confederacies, with a common meeting-place at the holy city of Amritsar. The Mughals had nominally ceded the Punjab to Ahmad Shāh; but the Durrāni kings never really extended their rule to the eastern portion, where the Sikhs established their authority not long after 1763. The Afghān revolution in 1809 facilitated the rise of Ranjīt Singh, a Sikh adventurer, who had obtained a grant of Lahore from Zamān Shāh, the Durrāni ruler of Kābul, in 1799. Gradually this able chieftain spread his power over the greater part of the Punjab, and even in 1808 attacked the small Sikh principalities on the east or left bank of the Sutlej. (See CIS-SUTLEJ STATES.) These sought the protection of the British, now masters of the North-Western Provinces with a protectorate over the royal family of Delhi; and an agreement was effected in 1809 by which Ranjīt Singh engaged to preserve friendship with the British Government, and not to encroach on the left bank of the Sutlej, on condition of his sovereignty being recognized over all his conquests north of that river, a treaty which he scrupulously respected till the close of his life. In 1818 Ranjīt Singh stormed Mūltān, and extended his dominions to the extreme south of the Punjab; and in the same year he crossed the Indus, and conquered Peshāwar, to which shortly after he added the Derajāt, as well as Kashmir. He had thus succeeded during his own lifetime in building up a splendid power, embracing almost the whole of the present Province, together with the Native State of Kashmir.

On his death in 1839, his son Kharak Singh succeeded to the throne. First Sikh War.

the throne of Lahore, but died, not without suspicion of poison, in the following year. A state of anarchy ensued, during which the Sikhs committed depredations on British territory, resulting in what is known as the first Sikh War. The Sikh leaders having resolved on war, their army, 60,000 strong, with 150 guns, advanced towards the British frontier, and crossed the Sutlej in December, 1845. The details of the campaign are sufficiently known. On December 18 the first action was fought at Mūdkī, in which the Sikhs attacked the troops in position, but were defeated with heavy loss. Three days afterwards followed the toughly contested battle of Ferozeshāh; on January 22, 1846, the Sikhs were again defeated at Aliwāl; and finally, on February 10, the campaign was ended by the capture of the Sikh entrenched position at Sobraon. The British army marched unopposed to Lahore, which was occupied on February 22, and terms of peace were dictated. These were, briefly, the cession in full sovereignty to the British Government of the territory lying between the Sutlej and the Beās rivers, and a war indemnity of $1\frac{1}{2}$ millions sterling. As the Lahore Darbār was unable to pay the whole of this sum, or even to give satisfactory security for the payment of one million, the cession was arranged of all the hill country between the Beās and the Indus, including Kashmīr and Hazāra; arrangements were made for the payment of the remaining half-million of war indemnity, for the disbandment of the Lahore army, and its reorganization on a reduced scale. The other terms included the cession of the control of both banks of the Sutlej; the recognition of the independent sovereignty of Mahārājā Gulāb Singh of Jammu; a free passage through Sikh territory for British troops; and the establishment of a British Resident at Lahore. In addition, at the request of the Lahore Government, it was settled that a British force should remain at Lahore for a time to assist in the reconstitution of a satisfactory administration. Simultaneously, a treaty was executed with Mahārājā Gulāb Singh by which the English made over to him in sovereignty the Kashmīr territory ceded by the Lahore government, in consideration of a payment of three-quarters of a million sterling. Shortly afterwards difficulties arose regarding the transfer of Kashmīr, which the Sikh governor, instigated by Lāl Singh, the chief of the Lahore Darbār, resisted by force of arms. Lāl Singh was deposed and exiled to British India; and in December, 1846, a fresh treaty was concluded, by which the affairs of the State were to be carried on by a Council of Regency, under the direction

and control of the British Resident, during the minority of the young Mahārājā Dalip Singh.

For a time the work of reorganizing the shattered govern-
ment of the country proceeded quietly and with every prospect
of success. But besides many minor causes of discontent Second
Sikh War. among the people, such as the withdrawal of the prohibition
against the killing of kine, and the restored liberty of the much-
hated and formerly persecuted Muhammadans, the villages
were filled with the disbanded soldiery of the old Sikh army,
who were only waiting for a signal and a leader to rise and
strike another blow for the power they had lost. At length,
in April, 1848, the rebellion of the ex-Diwān Mūlraj at Multān,
and the murder of two British officers in that city, roused
a general revolt throughout the Punjab. Multān city was
invested by hastily raised frontier levies, assisted afterwards
by British troops under General Whish; the siege, however,
had to be temporarily raised in September, owing to the rapid
spread of disaffection among the Sikh troops. The two
rebellious Sardārs, Chattar Singh and Sher Singh, invoked the
aid of the Amīr of Kābul, Dost Muhammad, who responded
by seizing Peshāwar, and sending an Afghān contingent to
assist the Sikhs. In October, 1848, the British army, under
Lord Gough, assumed the offensive, and crossed the Sutlej.
Proceeding from Ferozepore across the Punjab at an angle
to the Sikh line of march, it came up with Sher Singh at
Rāmnaḡar, and there inflicted on him a severe check. The
Sikh army, consisting of 30,000 men and 60 guns, made a
stand at Chilianwāla, where an indecisive and sanguinary
battle was fought on January 13, 1849. Two or three days
after the action, Sher Singh was joined by his father Chattar
Singh, bringing with him Sikh reinforcements, and 1,000
Afghān horse. Lord Gough awaited the arrival of the column
under General Whish (set free by the fall of Multān on
January 28), and then followed up the Sikhs from Chilianwāla
to Gujrāt, where the last and decisive battle was fought on
February 22, the Sikhs being totally defeated with the loss of
60 guns. The Afghān garrison of Peshāwar were chased back
to their hills, the Amīr Dost Muhammad himself narrowly
escaping capture. The remnants of the Sikh army and the
rebel Sardārs surrendered at Rāwalpindī on March 14, and
henceforth the entire Punjab became a Province of British
India. The formal annexation was proclaimed at Lahore on
March 29, 1849, on which day terms were offered to, and
accepted by, the young Mahārājā Dalip Singh, who received

an annuity of £50,000 a year and resigned for himself, his heirs, and his successors, all right, title, and claim to the sovereignty of the Punjab, or to any sovereign power whatever. He resided till his death in England, where he purchased estates, married, and settled down as an English nobleman.

The Punjab, after being annexed in 1849, was governed by a Board of Administration. It was subsequently made a Chief Commissionership, the first Chief Commissioner being Sir John Lawrence, who afterwards became the first Lieutenant-Governor.

The
Mutiny.

At the outbreak of the Mutiny in 1857 there were in the Punjab the following troops: Hindustānis, 35,000; Punjābi Irregulars, 13,000; Europeans, 10,000; there were also 9,000 military police. The Europeans consisted of twelve regiments, of whom no less than seven were either at Peshāwar or in the hills north of Ambāla, leaving only five regiments to hold the country from the Indus to the Sutlej. The news of the massacre at Delhi reached Lahore on May 12. There had not been wanting premonitory signs that the Hindustāni sepoys were disaffected and likely to rise; and, accordingly, on May 13, 3,000 native troops were successfully disarmed at Miān Mir. At the same time European troops were thrown into the forts of Govindgarh and Phillaur, the first important as commanding Amritsar, the second as containing a large arsenal which subsequently supplied the munitions of war for the siege of Delhi. On May 14 the arsenal at Ferozepore was secured; the sepoys here mutinied on the following day, and escaped without punishment. On the 21st of the same month the 55th Native Infantry rose at Mardān and fled to independent territory; many were killed in pursuit, and the remainder were destroyed by the hillmen. On June 7 and 8 the native troops at Jullundur broke and escaped to Delhi. In the first week of July the sepoys at Jhelum and Sialkot mutinied; they were destroyed, as were the 26th Native Infantry, who mutinied at Peshāwar on August 28.

Simultaneous with the vigorous suppression of open mutiny, 13,000 sepoys were disarmed without resistance during June and July. While the Hindustāni troops were thus disposed of, the dispatch of reinforcements to Delhi, an object of paramount importance, proceeded without a break. About May 17 it had become apparent that the Punjab did not sympathize with the movement in Hindustān, and that a good spirit prevailed in the Punjābi troops. It was therefore safe to augment them; and eighteen new regiments were raised in the

The loyal action of the chiefs had an important bearing on keeping the population steady during the crisis. The Rājā of Jind was actually the first man, European or native, who took the field against the mutineers; and his contingent collected supplies in advance for the English troops marching upon Delhi, besides rendering excellent service during the siege. The Rājās of Patialā and Nābha also sent contingents for field service; and with the exception of the Nawāb of Bahāwalpur, who did not stir, every chief in the Punjab, so far as he could, aided the English in preserving order and in suppressing rebellion. Rewards in the shape of grants of territory were made to the chiefs of Patialā, Jind, and Nābha, and a large *talukdāri* estate in Oudh was conferred upon the Rājā of Kapūrthala.

Later
events.

Since the Mutiny, the Punjab has made rapid progress in commercial and industrial wealth. In 1858 the Delhi territory lying on the right bank of the Jumna, together with the confiscated territory which had formerly belonged to the Nawābs of Jhajjar and Bahādurgarh, was transferred from the North-Western Provinces to the Punjab. The territory thus transferred included the present Districts of Delhi, Rohtak, and Gurgaon, almost the whole of Hissār, and portions of Karnāl and Ferozepore. The year after the suppression of the rebellion is remarkable for the commencement of the first line of railway in the Punjab, from Amritsar to Multān (February, 1859), and for the admission of water into the Bāri Doāb Canal. With the exception of punitive military expeditions against marauding hill tribes, the history of the Province has been one of uninterrupted progress. Canals have spread irrigation over its thirsty fields; railways have opened new means of communication for its surplus produce; and British superintendence, together with the security afforded by a firm rule, has developed its resources with astonishing rapidity. In October, 1901, the North-West Frontier Province was formed. It comprises all the territories formerly administered or controlled by the Lieutenant-Governor of the Punjab which lie to the west of the Indus, except the trans-Indus portion of the Isa Khel *tahsil* of Miānwāli District, the District of Dera Ghāzi Khān, and the territory occupied by the protected tribes on its western border and known as the Baloch Trans-frontier. It also includes the District of Hazāra, east of the Indus.

Archaeo-
logy.
Early
period.

Though the Punjab was the earliest seat of Vedic civilization, archaeology has hitherto failed to discover any monuments or traces of the epic period. Not a single relic of the Macedo-

nian invasion has been brought to light, and, as in the rest of India, the oldest archaeological monuments in the Punjab are the Asoka inscriptions. Of these, two were inscribed on pillars which now stand at Delhi, where they were re-erected by Firoz Shāh in about 1362, one having been originally erected at Topra at the foot of the Siwālik Hills in the Ambāla District of this Province, and the other near Meerut in the United Provinces. Both the inscriptions are in the ancient Brāhmi script, which is found in all the Asoka inscriptions excepting those at Shāhbāzgarhi and MĀNSEHRA in the North-West Frontier Province. The vast ruins of Takshasilā (Taxila), now known as Shāhdheri, in Rāwalpindī District, remain to show the extent of the capital of the great Mauryan province which comprised the modern Punjab and the North-West Frontier Province. South-east of Takshasilā is the tope of Manikyāla, identified by General Sir Alexander Cunningham as one of the four great *stūpas* mentioned by the Chinese pilgrim Fa Hian. It is the largest *stūpa* in Northern India, and is believed to have been built to commemorate the sacrifice of the Bodhi-sattva, who gave his body to feed a starving tigress. Near this great *stūpa* is a smaller one, which contained a slab with a Kharoshthi inscription recording its erection during the reign of Kanishka early in the Christian era.

In Kāngra District a few remains testify to the prevalence of Buddhism in the Himālayan valleys of the north-east Punjab. Close to PATHYĀR, 6 miles south-east of Kanhiāra (? Krishna-vihāra), a votive inscription of a primitive type in both Brāhmi and Kharoshthi has been found; and at KANHIĀRA itself an inscription, also in both characters, records the foundation of a monastery, and indicates the existence of Buddhism in that locality during the second century A.D. A much later inscription at CHARĪ contained the formula of the Buddhist faith. The existence of Buddhism in the south-west of the Punjab is demonstrated by the ruined *stūpa* and inscription at SUI VEHĀR in the modern State of Bahāwalpur, and by a similar ruin at Naushahra, 100 miles south-west of Sui VEHĀR. Buddhism.

The Punjab can show but few Hindu antiquities. To some extent this is due to the destructive action of the great rivers on whose banks the ancient cities lay, but the iconoclasm of the Moslem invaders was even more destructive. Thus the Arabic inscriptions on the Jāma Masjid or Kuwwat-ul-Islām at Delhi record that material for the building was obtained by demolishing twenty-seven idol-houses of the Hindus, and their Hinduism.

deaths from plague in 1905 numbered 390,233, or 15.8 per thousand of population. The usual measures have been adopted for dealing with outbreaks of plague and with the object of preventing its spread, including the isolation of plague patients and the segregation of persons who had been exposed to infection, the evacuation of infected houses and villages, and the disinfection of houses and effects. Medical treatment and anti-plague inoculation have always been freely offered; but the people have usually preferred native medicines, and the attempts which have been made to eradicate or diminish plague by means of inoculation have not proved successful. Until May, 1901, most of the precautions, with the exception of medical treatment and inoculation, were compulsory; but since then compulsion has been gradually abandoned, and is now chiefly restricted to the reporting of plague occurrences, and the inspection or detention of persons travelling either by road or railway to certain hill stations.

Infant
mortality.

Judged by English standards infant mortality is extremely high, especially in the case of girls. This will be clear from the following table:—

Year.	Infant population in 1901.		Number of deaths under one year.		Deaths per 1,000 of infant population.		Number of births registered.		Deaths per 1,000 registered births.	
	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.	Male.	Female.
1901	401,640	372,471	91,894	88,058	270	379	373,466	339,067	246	260
1902			107,832	101,216	316	321	461,659	418,525	273	242
1903			117,891	110,782	346	351	459,629	410,240	260	270
1904			97,610	90,832	286	288	436,678	397,371	223	229

Sex
statistics.

The births registered show a marked excess of male births, 111 boys being born to every 100 girls. This initial deficiency in the number of females is accentuated, especially in the first year of life, by the heavy mortality among girls and women up to the age of 40. Of the 24,754,737 persons enumerated in 1901, 13,552,514 were males and 11,402,223 females, so that 53.9 per cent. of the population were males and 46.1 per cent. females. In other words, for every 1,000 males there were 854 females in 1901, compared with 851 in 1891 and 845 in 1881. These figures show that the number of females in the Punjab is increasing more rapidly than the number of males, though improved enumeration probably accounts to some extent for the improved ratios of 1891 and 1901. The proportion of females in the Punjab as a whole is probably not affected by migration. In different parts of the Province the ratio varies, being lowest in the central Districts and highest

in the Himalayan and submontane. These variations are not explicable by differences in the position of women. The Sikhs, whose women are comparatively well educated and enjoy more liberty than those of the Muhammadans or Hindus, return a very low ratio of females, the figures for 1901 being Sikhs 778, Hindus 844, and Muhammadans 877 per 1,000 males.

Among Muhammadans marriage is a civil contract. Among Hindus, Sikhs, and Jains it is in theory a sacrament, indissoluble save by death, and not even by death as far as the wife is concerned. But practice does not always follow precept; and among the lower Hindu and Sikh castes remarriage (*karewa*) is allowed, while in the Himalayas women are sold from hand to hand, and a system of temporary marriage prevails. On the other hand, the prejudice against widow marriage is almost as strong among Muhammadans of the superior classes as it is among orthodox Hindus. All castes view marriage as desirable for a boy and indispensable for a girl, an unmarried maiden who has attained puberty being a social stigma on her family, especially among the Rājputs. Betrothal is, as a rule, arranged at a very early age, and the wedding takes place while the bride is still a child, though she does not go to live with her husband till a later period. Infant marriage is, however, by no means universal, and 4.5 per cent. of the girls and 26 per cent. of the boys over fifteen are unmarried. Early marriages are commonest among Hindus and in the east of the Province. The ceremonies connected with marriage are of infinite variety, the wedding especially being made an occasion for much costly hospitality and display. As a rule, Hindus and Sikhs observe the rule of exogamy which forbids marriage within the tribe, and that of endogamy which permits it only within the caste; but a third social rule, which has been called the law of hypergamy, also exists. By this a father must bestow his daughter on a husband of higher social status than his own, though he may seek a bride for his son in a lower grade. This law renders it difficult and costly for the middle classes to find husbands for their daughters, or brides for their sons, as the lower grades have no scruple in exacting money for a girl. Among the Hindu agriculturists of the extreme east of the Province, the seven circuits round the sacred fire, prescribed by Hindu law, form the essential part of the marriage ritual, and the strict Hindus of the towns everywhere observe the same usage. Farther west among the agriculturists the number is reduced to four, while in the south-western Districts the important part

Statistics
of civil
condition.

of the ceremony is the *sir mel* or joining of the heads of the parties. The Muhammadan form of marriage, simple in itself, has almost everywhere been coloured by the Hindu ritual. The following table gives statistics of civil condition as recorded in 1891 and 1901 :—

Civil condition.	1891.			1901.		
	Persons.	Males.	Females.	Persons.	Males.	Females.
Unmarried	10,397,033	6,316,398	3,880,435	11,241,255	7,007,895	4,233,360
Married	10,347,329	5,237,107	5,310,222	11,062,125	5,459,012	5,603,113
Widowed	2,328,261	818,729	1,509,532	2,427,270	852,148	1,575,122

Polygamy is not at all common, and is largely a question of means. Among Hindus and Sikhs only 6 per 1,000 of the married males have more than one wife, and among Muhammadans only 11. Many of the agricultural and menial castes allow the marriage of widows, preferably to the brother of the deceased husband, and it is among them that polygamy is commonest. It is rare among high-caste Hindus, who do not recognize remarriage. The ceremonies of remarriage are much simpler than those of marriage, and the woman never acquires the status she had in the house of her first husband, though the children of the second marriage are regarded as legitimate. Avowed polyandry is confined to the Himālayan tracts, though the practice is not unknown among some socially inferior castes in the plains. In the hills it usually exists in the Tibetan form, in which the husbands are all brothers. Indications of succession through females among the polyandrous tribes are few and obscure, and the general rule is that sons succeed as the children of the brotherhood which owns their mother. Divorce is not common, even among Muhammadans, though their law recognizes a husband's right to put away his wife without assigning a reason. Among the Hindu agricultural tribes of the plains it is extremely rare, though the custom is not unknown among the inferior castes and among the Jats of the central Districts. It is only in the Eastern Himālayas, within the limits of Kāngra and Simla Districts and the Hill States, where the marriage tie is notoriously loose, that the power of divorce belongs by custom to the wife as well as to the husband. The joint-family system of Hindu law is almost unknown to the peasantry of the Province. It prevails only among the Brāhmans and the clerical and commercial classes, and even among them it hardly exists outside the towns of the Delhi Division. Among the agricultural tribes of the

plains, sons by different mothers usually inherit in equal shares; but the *chundawand* rule, by which they inherit *per stirpes*, is not uncommon among both Hindus and Muhammadans, especially in the centre and west of the Province.

With the exception of Tibeto-Burman, spoken in its pure form only in the Himālayan canton of Spiti and in a debased form in Lāhul and Upper Kanāwār, the vernaculars of the Punjab belong entirely to the Aryan family of languages. Of this family the Indian branch greatly predominates, the Irānian being represented only by 52,837 persons speaking Pashtū, 40,520 speaking Baluchī, and 3,074 speaking Persian. The Pashtū is confined to the Pathān tribes settled in Attock District and in the Isā Khel *tahsil* of Miānwāli on the banks of the Indus, and to Pathān immigrants. Baluchi is virtually confined to Dera Ghāzi Khān District and the adjacent State of Bahāwalpur. Persian is spoken only by immigrant families and refugees from Persia and Afghānistān.

Western Punjābi is spoken in the Indus valley and east of it as far as the valley of the Chenāb in Gujrānwāla, whence its boundary is a line through Montgomery District and the State of Bahāwalpur. East of it Eastern Punjābi is spoken as far as the meridian passing through Sirhind. East again of that line Western Hindī is the dominant speech. These languages are divided into numerous dialects. The Western Punjābi (also called Jatki, 'the Jats' speech,' and Multāni) comprises the Hindko, Pothwārī, Chibhālī, Dhūndī, Ghebi, and Awānkārī. Eastern Punjābi has two main dialects: the standard of the Mānjha, or central part of the Bāri Doāb, spoken round Amritsar; and that of the Mālwā, the tract south of the Sutlej. Western Hindī comprises Hariānī (the dialect of Hariāna), Bāngarū (that of the Bāngar), Jātū (the Jāt speech), and Ahīrwātī (the Ahīr speech). To these three languages must be added the maze of Sanskritic dialects spoken in the hills, and hence called generically Pahārī. These resemble Rājasthānī rather than Punjābi, and merge into the Tibeto-Burman in Lāhul and Kanāwār. The Gūjarī, or Gujar speech, also deserves mention as a tongue spoken in the Himālayas, but also closely resembling Rājasthānī.

The following table shows the numbers returned in 1901 as speaking the chief languages:—

Western Punjābi	2,755,463
Punjābi	15,346,178
Rājasthānī	603,747
Western Hindī	4,164,373
Western Pahārī	1,554,072

Caste.

As an institution caste plays a far less important part in the social life of the people than in other parts of India. Its bonds are stronger in the east than in the west, and generally in the towns than in the villages, so that in the rural areas of the Western Punjab society is organized on a tribal basis, and caste hardly exists. Ethnically, if the Buddhists of the Himālayan tracts of Lāhul, Spiti, and Kanāwār be excluded, the mass of the population is Aryan, other elements, such as the Mongolian and the Semitic (Saiyids, Kureshis, and other sacred Muhammadan tribes), having by intermarriage with Indian converts to Islām lost nearly all traces of their foreign origin. Socially the landed classes stand high, and of these the Jats (4,942,000) are the most important. The Jat, or Jāt as he is termed in the south-east of the Province, is essentially a landholder (*samindār*), and when asked his caste usually replies 'Jat *samindār*.' The Jats are divided into numerous tribes and septs, and many of these hold considerable areas which are divided into village communities. By religion they are essentially Hindus, 1,595,000 being so returned in 1901; and they also comprise the great mass of the Sikhs, 1,390,000 being of that creed. The Sikh Jats are mainly confined to the central Districts of the Punjab. Large numbers of them have from time to time been converted to Islām, and the Muhammadan Jats number 1,957,000. As cultivators the Hindu or Sikh Jats rank higher than any other class in the Province, and they make enterprising colonists and excellent soldiers, the Sikh holding a marked pre-eminence in these respects. The Muhammadan Jat lacks the energy of his Hindu and Sikh kinsman, but he is not far behind him as a cultivator. Next in importance are the Rājputs (1,798,000). The majority of them are Muhammadans (1,347,000). They do not rank high as cultivators, but furnish many recruits to the Indian army under the general designation of Punjābi Muhammadans. The Hindu Rājputs are found mainly in the north-east corner of the Province, and in the Himālayan and submontane tracts, the Rājput tribes of the plains having for the most part accepted Islām. As a body the Rājputs stand higher than the Jats in the social system, and this has prevented their adherence to the levelling doctrines of Sikhism. Below these castes, both socially and numerically, stand the Muhammadan Arains (1,007,000), the Hindu and Sikh Sainis (127,000), and the Kambohs (174,000), who live by *petite culture* and rarely enlist as soldiers. In the south-east of the Province the Ahirs (205,000) hold a position little if at all

inferior to the Jāts. In the Himālayas of the North-East Punjab, the Kanets (390,000) and Ghiraths (170,000) form great cultivating classes under Rājput overlords.

In the north-west the Gakhars (26,000), Khokhars (108,000), and Awāns (421,000), and farther west and south the Pathāns (264,000), take the position held by Rājputs elsewhere. In the south-west, especially in Dera Ghāzi Khān District west of the Indus, the Balochs (468,000) form a dominant race of undoubted Irānian descent. Essentially pastoral tribes are the Gūjars, or cowherds (632,000), found mainly in the Lower Himālayas, and the Gaddis, or shepherds (26,000), in the State of Chamba and Kāngra District.

The trading castes in the villages occupy a lower position than the landowning classes, but in the towns they rank higher. The most important are the Baniās (452,000) in the south-east, the Khatris (436,000) in the centre and north-west, and the Aroras (653,000) in the south-west. All these are Hindus or, rarely, Sikhs. The principal Muhammadan trading classes are the Shaikhs (321,000) and Khojas (99,000). Attached to these classes by a system of clientship, which is a curious combination of social dependence and spiritual authority, are the various priestly castes, the Brāhmins (1,112,000) ministering to Hindus, and the Saiyids (238,000) to Muhammadans. Both these classes, however, often follow secular occupations, or combine them with religious functions, and similar functions are exercised by countless other religious tribes and orders.

The ethnical type in the Punjab is distinctly Aryan, there being few traces of aboriginal or foreign blood, if the Tibetan element in the extreme north-east be excluded. The typical Punjābi is tall, spare but muscular, broad-shouldered, with full dark eyes and an ample beard. The hair is invariably black, but the complexion varies from a deep olive-brown to wheat-coloured. As a rule the lower classes are darker than the upper, and the complexion is fairer in the north-west than in the south-east. The Jāts of the Mānjha and Mālwa exhibit a splendid physique, and the peasantry of the plains are generally a fine people; but in the riverain valleys there is a marked falling-off, and in the south-east of the Province the type approximates to that of Hindustān. In marked contrast to the plains people are those of the Himālayas. Among these the higher or Rājput class is slight, high-bred, and clean-limbed, but sometimes over-refined, while owing to immorality the lower classes are often weakly and under-sized. Nothing is more

Physical
character-
istics.

striking than the influence of hereditary occupation and town life on physique, and the urban and trading populations are markedly inferior physically, though not intellectually, to the peasantry.

Religions. The Punjab by religion is more Muhammadan than Hindu. Of the total population enumerated in 1901, 12,183,345 persons, or 49 per cent., were Muhammadans. In the west and in the submontane tracts Islām is the dominant religion, its followers forming four-fifths of the population in the north-west dry area, but the Hindus are more numerous in the Indo-Gangetic plain, and in the Himālayas they form 95 per cent. of the population. In the south-west, Multān and Uch were the earliest strongholds of the Moslem faith, and the population is deeply imbued with Muhammadan ideas, Hinduism being confined to the trading, landless castes, who are socially despised by their Muhammadan neighbours. The early Sultāns made Delhi a great centre of Muhammadan influence, but they and their successors appear to have left the Hindus of the Punjab unmolested in religious matters until the Mughal empire was firmly established. Akbar's policy of religious toleration lessened the gulf between the two creeds, but many Muhammadan tribes ascribe their conversion to the zeal of Aurangzeb. Islām in the Punjab is as a rule free from fanaticism, but among the more ignorant classes it has retained many Hindu ideas and superstitions. Though the great mass of its followers profess the orthodox Sunni creed, the reverence paid to Saiyids as descendants of Ali, the Prophet's son-in-law, is unusually great; and popularly Islām consists in the abandonment of many Hindu usages and the substitution of a Muhammadan saint's shrine for a Hindu temple. A very important factor in Muhammadan religious life is the Sūfi influence which, originating in Persia, was brought into the Punjab by the early Sultāns of Ghor. Its first great exponent was the saint Kutb-ud-dīn Bakhtiyār, in whose honour the Kutb Minār at Delhi was erected. His disciple Bāba Farid-ud-dīn, Shakar-ganj, of Pāk-pattan in Montgomery District, is perhaps the most widely revered saint in the Punjab; and the shrine of his disciple Khwāja Nizām-ud-dīn, Aulia, near Delhi, is also a place of great sanctity. Spiritual descendants of these saints founded shrines at Mahārān in the Bahāwalpur State, at Taunsa Sharif in Dera Ghāzi Khān District, and elsewhere. Thus the Province is studded with Sūfi shrines.

Hinduism in the Punjab is a singularly comprehensive creed. As the Province can boast no great centres of Hindu thought or

learning, the Punjābi Hindu looks to Hardwār on the Ganges as the centre of his faith. But Hardwār is accessible only to the eastern Districts, so elsewhere pilgrimages are made to countless minor temples and shrines, even those of Muhammadan saints. Vishnu is worshipped chiefly by the Baniās of the south-east and by the Rājputs, but Sivdiwālas or temples to Siva are nearly as common as Thākurdwāras or temples of Vishnu (Thākur). Far more popular than these are the widely spread cults of Gūga, the snake-god, and Sakhi Sarwar, the benevolent fertilizing earth-god, whose shrine in Dera Ghāzi Khān is the object of regularly organized pilgrimages. Gūga's legend also makes him a Rājput prince converted to Islām, and Sakhi Sarwar has been metamorphosed into a Muhammadan saint. There are countless minor cults, such as that of Sitlā, the 'cool one,' the small-pox goddess, and those of the *siddhs* or 'pure ones.' Ancestor-worship is very common among the Jats.

In the Himālayas Vishnu and Siva have many devotees, the Rājputs especially worshipping the former; but underlying these orthodox cults are those of the innumerable *devatās* (gods or spirits), *devīs* (goddesses), and *hīrs* (heroes), which are probably more ancient than Hinduism. The principal religious orders are the Sanyāsis and Jogis, who follow in theory the philosophical system of Sankarāchārya and Pātanjali. There are also Muhammadan Jogis, whose mysticism has much in common with the practices of the Hindu ascetics. The Bairāgis, a Vaishnava order founded by Rāmānand in the fourteenth century, are likewise numerous.

The Arya Samāj was founded by Pandit Dayānand Saraswati, a Brāhman of Kāthiāwār, about 1875. During his lifetime the doctrine spread rapidly; but since his death in 1883, the growth of the Samāj has been comparatively slow, and in 1901 only 9,105 males over 15 returned themselves as Aryas. The movement has been well described as being 'primarily the outcome of the solvent action of natural science on modern Hinduism.' The Samāj finds its sole revelation in the Vedas, which, rightly interpreted, prove that those who were inspired to write them were acquainted with the truths which modern science is slowly rediscovering. It attaches no merit to pilgrimages or to most of the rites of popular Hinduism. The liberal social programme of the Aryas is the outcome of their religious views, and includes the spread of education, the remarriage of widows, and the raising of the age for marriage. They are drawn, as a rule, from the best-educated classes of the community, Khattris, Aroras, and Brāhmins, and the doctrines

Arya
Samāj.

they preach have met with acceptance chiefly in the progressive tracts north and east of the capital. At Lahore they maintain a college. Since 1893 the Samāj has been divided into two parties. The cause of the schism was the question of the lawfulness of meat as an article of diet. Those in favour of it are known as the 'cultured' or 'college' party, and those against it as the *mahātma* party.

Religious
architec-
ture.

Religious architecture still maintains the tradition of each sect or community, with few deviations from the old plans which were designed mainly with a view to the needs of each religion. Ablution is an essential feature of every sect, so that a tank of water, with other necessary facilities, is found in a prominent position in all buildings. Mosques, now usually built of brick, consist of an open courtyard, with the *mihrah* on the west, surmounted by a dome flanked with *minārs* or pillars. The Hindus enclose their temples in a walled courtyard, containing the shrine for the deity to which the temple is dedicated. Over this is a pyramidal tower, surmounted by a metal finial shaped to represent the emblem of the divinity enshrined. The temples of the Sikhs are usually designed on an orthodox square plan consisting of nine parts, known as the *naukara*. The general arrangement is a courtyard, in which is situated a tank of water for washing and a central open construction (*bāradari*) for the reading of the 'Granth.' Over this is a dome, which may be distinguished from that of a mosque by being generally fluted or foliated in design. The modern Sikhs being adepts in wood-carving, the doors and other details are not unfrequently freely decorated. Jain temples are built on a somewhat similar plan to those of the Hindus, except that more than one shrine is often found in the enclosure and pillared verandas are a feature. In modern examples, however, this latter characteristic is frequently omitted.

Christian
missions.

Excluding the Jesuits at the Mughal court, the first Christian missionary to the Punjab was a Baptist preacher who visited Delhi early in the nineteenth century. Delhi and Simla are the only stations now occupied by this mission. The first great missionary movement in the Punjab proper was the establishment of the American Presbyterian Mission at Ludhiāna in 1834. The Ludhiāna Mission, as it thus came to be called, occupies a number of stations in the Central Punjab south of the Rāvi, and maintains the Forman Christian College at Lahore, with a large press at Ludhiāna. The Church Missionary Society began operations in the Punjab in 1851. Its stations comprise a group round Amritsar and Lahore, and

a long line of frontier stations stretching from Simla to Karāchi in Sind. It has a college in Lahore which prepares natives of India for holy orders, and the Church of England Zanāna Mission works in many of its stations. The Society for the Propagation of the Gospel began work in Delhi in 1852. In 1877 it was reinforced by the Cambridge Mission, which maintains the St. Stephen's College at Delhi. Other missions are the Methodist Episcopal, the Church of Scotland, the Moravian, the American United Presbyterian, the Zanāna Bible and Medical Missions, and the Salvation Army, besides the missionary work conducted by various Roman Catholic orders.

The following table gives statistics of religion as recorded in 1891 and 1901 :—

	1891.	1901.
Hindus	10,122,473	10,344,469
Sikhs	1,851,070	2,102,896
Jains	45,615	49,983
Buddhists	6,136	6,940
Zoroastrians	370	477
Muhammadans	11,198,270	12,183,345
Christians { European and Eurasian	28,971	28,611
{ Native	19,561	37,980
Jews and unspecified	57	36

Of the total population at least 56 per cent. are supported by agriculture. Next in importance is the artisan section of the community, which numbers 4,898,080, or 19.8 per cent. of the population. Of these, cotton-weaving, spinning, &c., supports 1,012,314, and leather-working 742,034, while potters number 269,869, carpenters 263,717, and iron-workers 164,814. The making of tools and implements supports 135,786, and building 121,153; goldsmiths number 120,755, and tailors 108,963, but the figures for these smaller groups are subject to several qualifications. Commerce supports only 2.8, and the professions 2.2 per cent., of the population, while public service maintains 2 per cent. The residue is composed of general labourers (812,584 in number), personal domestic servants (1,771,944), and 827,289 persons whose subsistence was independent of occupation. In spite of the caste system, the division of labour has not been pushed very far in the Punjab. The carpenter is often an ironsmith, the shopkeeper a money-lender, the agriculturist a trader, and so on.

The staple food consists of the grain grown in the locality. Food. Well-to-do people eat wheat and rice, while the ordinary peasant's food consists chiefly of wheat, barley, and gram in

summer, and maize in winter. The poorer classes use inferior grains, such as *chīnā* (*Panicum miliaceum*), *mandua* (*Eleusine coracana*), *jowār* (great millet), &c. In the hill, submontane, and canal-irrigated tracts, where rice is largely grown, it forms the principal diet of the people in general, but elsewhere it is eaten only on festive occasions. In the west and south-west *bājra* (spiked millet) is mostly consumed in the winter. Pulses and vegetables are eaten with bread by prosperous *zamīndārs* and townspeople, but the poorer classes, who cannot always afford them, merely mix salt in their bread and, if possible, eat it with buttermilk. Peasants are especially fond of curds, buttermilk, and green mustard (*sarson*) as relishes with bread. *Ghi* is used only by those who can afford it. Meat is seldom eaten, except by the better classes, and by them only on occasions of rejoicing or by way of hospitality. The common beverages are buttermilk, water mixed with milk and sugar, country sherbets, and *sardai*, a cooling drink made by bruising certain moistened ingredients in a mortar; but the use of the two latter is almost entirely confined to the townsfolk. Aerated waters are coming rapidly into use. Hemp (*bhang*) is ordinarily drunk by the religious mendicants (*fakirs*), both Hindu and Muhammadan. In towns cow's milk is used, but in rural tracts buffalo's is preferred, as being richer. In the camel-breeding tract camel's milk is also drunk.

Dress.

The dress of the people is of the simplest kind and, in the plains, made entirely of cotton cloth. A turban, a loin-cloth, a loose wrap, thrown round the body like a plaid, and, in the cold season, a vest or jacket of some kind, are the usual garments. White is the usual colour, but dyed stuffs are often worn, especially on festive occasions. As a rule Muhammadans avoid red, while Saiyids and others claiming descent from the Prophet favour green. Hindus similarly avoid blue, but it is the characteristic dress of Sikh zealots, like the Akālts. Minor variations in dress are innumerable, and fashion tends to adopt European clothes, often with most incongruous results, among the men.

Women are far more conservative; but the influence of Islām has brought about the adoption of the trouser instead of the Hindu skirt, which is only general in the south-east. Here again local and tribal customs vary. Thus Rājput women, Hindu as well as Muhammadan, wear the trouser, and Gūjars the petticoat, while many Sikh and Hindu Jat women wear both. In the wilder parts of the central area

the skirt was little more than a kilt, but the more elaborate garment is coming into fashion. The tight bodice is essentially a Hindu woman's garment, the looser shirt a Muhammadan characteristic. The wrap or *chādar* is universally worn; and the *parda* system compels most Muhammadan, and many Hindu and Sikh ladies of the better classes, to wear, when compelled to leave the house, an ungainly and uncomfortable veil (*burka*) which covers the whole form.

The ordinary peasant's house is not uncomfortable, though Dwellings. hardly attractive. Built of mud, with a flat roof, and rarely decorated, it is cooler in summer and warmer in winter than a house of brick or stone. In the large villages of the Central and South-East Punjab the dwellings are close and confined, but in the south-west a ruder and more spacious type is found. Houses of stone are mainly found in the hills, and slate roofs only in the Himālayas. Brick (*pakṣā*) houses in the villages are rapidly increasing in numbers, but in comfort are hardly an improvement on the old. In the cities such houses have long been the rule, but to secure privacy and additional room they are built or rebuilt to several storeys, rendering sanitation an insoluble problem. The furniture of an ordinary house is cheap and simple, comprising a few string beds, stools, boxes, spinning wheels, and cooking utensils, with a grain-receptacle of mud.

Muhammadans bury their dead, while Hindus and Sikhs, Disposal of the dead. with some exceptions, burn them. The casteless people, such as the Chūhrās and Chamārs, who stand outside the pale of Hinduism, imitate whichever religion happens to be dominant in their neighbourhood. Hindus collect the bones from the ashes of the funeral pyre and send them to be thrown into the Ganges, or, if they cannot afford that, cast them into an adjacent stream.

Games are singularly few, especially among children, and this perhaps explains why cricket, and to a lesser extent football, have become popular in the schools. In the villages a kind of prisoner's base, clubs, quoit-throwing (among the Sikhs), tent-pegging, especially in the Salt Range and western plains, and camel racing on the Bikaner border, are fairly popular. Otherwise athletics are a growth of British rule. Wrestling is virtually confined to professionals. Sport is often keenly followed, hawking, coursing, and shooting being favourite pastimes of the well-to-do in many rural tracts. In the towns quail-fighting is the form of sport most actively pursued. The drama hardly exists, except in a few rude plays (*stoāngs*), acted Amusements.

Muhammadan names generally consist of two words, the *alam* or name and *lakab* or honorary title, such as Muhammad Dīn, though, as above mentioned, the villager will as often as not be known by an abbreviation such as Mamdū. A combination of one of the 'comely' names of God with *abd* ('servant') is also common, such as Abdullah, or Abdul Ghafūr. About half the proper names of Muhammadans are of religious origin, and the rest differ in no way from those of Hindus. Besides the two regular names, both affixes and prefixes are found. Affixes generally denote the caste or clan, such as Ahlūwālia, Rāngarhia, Seth, or Varma (a purely Khattrī appellation), or are honorific, such as the Muhammadan 'Khān.' This affix sometimes, but rarely, tends to harden into a surname. Prefixes are honorific and answer to the European Mr. or Monsieur: such are among Hindus, Bābā, Lālā, Sodhī, Rājā, and Pandit; and among Muhammadans, Munshi, Fakīr, Wazīrāda, and Makhdūm. In addition a man may bear honorific titles, many of which, such as Rai Bahādur and Khān Bahādur, are given by Government, so that a Muhammadan's full style and title may run Makhdūm Abdul Azīz Khān Shams-ul-Ulama Khān Bahādur, or a Hindu's Bābā Raghunāth Singh Rai Bahādur Diwān Bahādur.

The most common endings for place names in the Punjab are the Arabic *ābād* ('abode') and *shahr* ('city') and the Hindu *pur*, *nagar*, and *wāra*, all meaning 'town' or 'place,' and *kot* and *garh* meaning 'fort.' Many are in the genitive, meaning, like Mukerīān or Fāzilka, the place of a certain tribe or people; while the termination *wāla*, meaning 'belonging to,' is one of the most common.

Excluding the Himālayan and other hill tracts and the ravines of Rāwalpindi, Attock, and Jhelum Districts, the vast alluvial plain is broken only by the wide valleys of its rivers. Its soil is a sandy loam, interspersed with patches of clay and tracts of pure sand. The soils of the Himālayan and lower ranges resemble those of the plains, but both sand and clay are rarer, and the stony area is considerable. The quality of the soil is, however, of comparatively little importance, facilities for irrigation, natural or artificial, being the primary factor. The monsoon current extends only to the extreme south-eastern Districts. The rainfall is fairly sufficient for agricultural purposes in the hills and in the submontane tracts, but diminishes rapidly as the distance from the hills increases, being as little as 5 and 7 inches in Muzaffargarh and Multān.

Agriculture.
Soils and conditions
of cultivation.

It is only in or near the Himālayas that unirrigated cultivation can be said to be fairly secure.

Harvests. The Punjab has two harvests: the *rabi* (*hārī*) or spring, sown mostly in October–November and mostly reaped in April–May; and the *kharif* (*sāwani*) or autumn, sown in June–August and reaped from early September to the end of December. Both sugar-cane and cotton, though sown earlier, are autumn crops. The spring sowings follow quickly on the autumn harvesting. To the spring succeeds the extra (*zaid*) harvest, chiefly tobacco, melons, and similar crops, harvested late in June. Speaking generally, the tendency, as irrigation develops, is for intensive cultivation in the *rabi* to replace the extensive cultivation of the *kharif*.

Ploughing. The advantages of frequent ploughing are thoroughly recognized, especially for wheat and sugar-cane, for which a fine seed-bed is essential. The plough used is an implement of simple construction, made of wood with an iron or iron-pointed share, and drawn by a single yoke of oxen. When the soil has been reduced to a fairly fine tilth, a heavy log of wood roughly squared, called *sohāga*, is used to supply the place of a light roller. It breaks up any remaining clods, and also compacts and levels the surface.

Sowing. There are three methods of sowing: by scattering the seed broadcast on the surface, by dropping it into the furrows by hand, or by drilling through a tube attached to the plough handle. The last method, if skilfully used, deposits the seed in the bottom of the furrow, and is employed when the surface is dry. The second is employed in moderately moist, and the first in thoroughly moist soils.

Manure. Land near a town or village is heavily manured, as also is land near a well, since it can be easily irrigated and valuable crops grown on it. Sugar-cane, maize, tobacco, and vegetables are always manured. Wheat, cotton, barley, and melons are manured only when manure is readily available. Spiked millet, gram, *tīra mīra*, and other inferior crops are never manured. Thorough manuring costs from Rs. 60 to Rs. 80 an acre, and is most common in the vicinity of the larger towns, the municipal boards of which make a considerable income by sales of refuse. In such localities two to four very rich crops a year are grown. Irrigated land is manured much more generally than unirrigated. Besides the sweepings of villages, night-soil, the dung of sheep, goats, and camels, the ashes of cow-dung, and nitrous earth are used for manure. The two last are applied as a top-dressing, especially for vegetables and

but is not infrequently sown and harvested with it. The yield is about 4 to 9 cwt. on unirrigated land, but may rise to 11 cwt. under irrigation.

Barley.

Barley is often sown mixed with wheat and gram, as it matures even if the rainfall be not sufficient for the wheat. It is also useful as a catch-crop, since it can be sown later than wheat. It is grown extensively for the breweries and as fodder. Barley ordinarily covers about 1,600 square miles. On irrigated land the out-turn is from 5 to 11 cwt., compared with 3 to 9 cwt. on unirrigated land.

Principal
autumn
crops.
Maize.

The staple cereals in autumn are maize, great millet (*jowār*), spiked millet (*bājra*), and rice. Of these, maize is the principal food-grain of the montane, submontane, and central tracts, and is cultivated extensively in all three. In 1904 it covered about 1,900 square miles. It is sown from the middle of June to the middle of August, and harvested between the middle of September and the middle of November. Maize yields from 4 to 11 cwt. on land dependent on rainfall, and from 7 to 13 cwt. where irrigation is available.

Spiked
millet.

In the Rāwalpindi and Delhi Divisions spiked millet is the chief crop, but it is also grown throughout the Province. It ordinarily covers more than 2,500 square miles, but in years of good rainfall more than 3,100 square miles. It requires less moisture than great millet, but its stalks are of inferior value as fodder. The yield varies from $2\frac{1}{2}$ to 10 cwt. per acre.

Great
millet.

Great millet, grown throughout the Province, ordinarily covers 3,000 square miles. This also is chiefly sown on unirrigated land. When sown as a food-crop, it still yields from 120 to 180 cwt. of green fodder per acre. Sown only as a fodder-crop, it is called *chari*. The out-turn of grain is from 3 to 5 cwt. per acre, increased by 1 or 2 cwt. if irrigated.

Rice.

Rice is grown chiefly in Kāngra, Hoshiārpur, Karnāl, and Ambāla Districts, and throughout the Lahore and Multān Divisions. It ordinarily covers more than 1,100 square miles. There are many recognized varieties. Sowings extend from March to August, and the crop is harvested in September and October.

Other
autumn
cereals.

Other important autumn cereals are *rāgi* or *mandwi* (*Eleusine coracana*), *chinā* (*Panicum miliaceum*), and *kangni* or Italian millet (*Setaria italica*). In 1904 these covered more than 300 square miles.

Cotton.

Cotton is increasing rapidly in importance as an export staple. The area sown now amounts to over 1,600 square miles. The crop is generally irrigated, except in the Delhi

1903-4 was a little more than 80 square miles, of which about 30 square miles were in Muzaffargarh District and 25 in Multān.

Garden
produce.

Highly manured land near villages grows turnips, carrots, and similar produce, which occupy 578 square miles. Potatoes, already a valuable crop in the Kāngra and Simla Hills, are increasing in importance. Mangoes are a paying fruit-crop in Hoshiārpur, Jullundur, Multān, and Muzaffargarh; and in the two latter Districts and in Dera Ghāzi Khān the date-palm flourishes, there being nearly 1,500,000 female trees which produce about 33,000 tons of fruit annually. It is consumed entirely in Northern India. There is some export of pears, apples, and other European fruit from the Kulū valley, but inaccessibility hinders the development of the industry.

Rotations.

The successions shown below are generally recognized, but all depends on climatic conditions, soils, the means of irrigation, and the system of agriculture followed in any given tract: Maize, indigo, or hemp, followed by wheat; great millet, followed by *masūr* and gram; rice, followed by barley, *masūr*, and peas; turnips or cotton, followed by maize; cotton or maize, followed by *senji*; *senji*, followed by melons. Since annexation, the potato, tea, and English fruits and vegetables have been introduced. The first-named is so important that the people call it 'the hillman's sugar-cane.' Attempts made to acclimatize American maize have succeeded only in the hills, and even there the stock has deteriorated. It requires nearly five months to mature, and the heat of the plains ripens it too rapidly. In 1901 an experimental farm of 55 acres was started at Lyallpur in the Chenāb Colony. A 500-acre seed farm has also been opened in the Jhelum Colony.

Improvements in
agricul-
tural
practice.

A combined Agricultural College and Research Institute is to be established at Lyallpur, with a staff which will include a Principal, a Professor of Agriculture, an Agricultural Chemist, an Economic Botanist, an Entomologist, and a Mycologist. The college will train men for the Agricultural department, and also as teachers of agriculture in normal schools. The present experimental farm at Lyallpur will be largely increased in size, and it is intended to establish similar farms on a smaller scale in localities selected as characteristic of the main divisions of the Province. As the scheme develops, it is hoped that an Agricultural Assistant will be appointed for each District. The Veterinary department is a part of the Agricultural department, under the control of the Director of Agriculture.

Loans.

The working of the Land Improvement and Agriculturists'

of the English and Arab blood of thoroughbred stallions. Large horse-fairs are held at Sargodha (in Shāhpur), Dera Ghāzi Khān, Rāwalpindi, Gujrāt, Amritsar, Multān, and Jalālābād (in Ferozepore).

Sheep are important in the South-West Punjab, where wool Sheep and goats. is a staple product. The *dūmba* or fat-tailed sheep is found in the Salt Range, but does not flourish east of it. In the Himālayas the variety found resembles that of Dartmoor or Exmoor, the *khādu* being the best breed. Goats are kept chiefly for milk and meat, but the hair is also largely used.

Camels are extensively used throughout the plains and in Camels. the Lower Himālayas, but the south and south-west supply the largest numbers. Mostly used as a pack-animal, the camel is also employed for draught, riding, and even ploughing in those parts. Camel fairs are held at Abohar and Bhiwāni (in Hissār).

Donkeys are miserable creatures in the Punjab, except in Donkeys Rāwalpindi and the Districts west of the Chenāb. and mules. Mule-breeding from imported donkey stallions supplied by the Army Remount department is carried on in ten Districts and in both the canal colonies, and elsewhere by the Civil Veterinary department.

Cattle are largely stall-fed. Every village has its grazing- Pasture- grounds; but the grass is never abundant and fails entirely in grounds. years of scanty rainfall, when the cattle are driven off in large numbers to find pasture along the rivers and below the hills.

The principal cattle fairs are those held at Amritsar, Jahāz- Cattle garh (in Rohtak), Gulū Shāh (in Siālkot), and Hissār. fairs.

The extent to which cultivation is dependent on irrigation Irrigation. may be gauged from the fact that 41 per cent. of the cultivated area is irrigated, mainly from wells and canals, and that 7 per cent. more is subject to inundation from the rivers. Hence only 52 per cent. of the cultivated area is wholly dependent on the rainfall. Of the 41 per cent. irrigated, 22 per cent. is irrigated from canals, 14 from wells, 4 from wells and canals combined, and 1 from streams and tanks.

The necessity and demand for irrigation vary with the climatic and physical conditions. Speaking generally, the necessity for perennial irrigation varies inversely with the amount of the rainfall, being therefore greatest in the south-west and least in the north-east submontane tracts. The two principal means of irrigation are canals and wells, the latter including various indigenous kinds of lift, and the area in which each can be used is determined by the depth of the spring-

level. Perennial canals are beneficial where the spring-level is not less than 20 feet below the surface ; but where it is higher, wells are used in the cold season and the canal is reserved for irrigating the autumn crop during the summer months, to prevent the soil from becoming waterlogged.

Canals.

Native rulers were not blind to the possibilities of irrigation in the Punjab ; but, at annexation, the only canals open in the Province, as it stood before the addition of the Delhi territory after the Mutiny, were the Hasli (since merged in the Bāri Doāb Canal) and a good many inundation canals in the south-western Districts. Thus the present canals are almost entirely the creation of British rule. These canals fall into two classes : the perennial canals, with permanent head-works ; and (2) the inundation canals which run only in the flood season, and irrigate the lowlands along the rivers. Of the former class there are now six canals : the WESTERN JUMNA, SIRHIND, BĀRI DOĀB, CHENĀB, JHELUM, and SIDHNAI, though there is seldom enough water in the river for a cold-season supply to the last-named. These great canals serve four-fifths of the total area irrigated from Government works. There are six series of inundation canals : the UPPER and LOWER SUTLEJ, CHENĀB, INDUS (right bank), MUZAFFARGARH (from the left bank of the Indus and right bank of the Chenāb), SHĀHPUR, and GHAGGAR. Besides these, numerous small inundation canals are owned by private individuals or District boards. Of these the GREY CANALS in Ferozepore are the chief. The total length of main channels and branches in 1890-1, 1900-1, and 1903-4 was 3,813, 4,644, and 4,744 miles respectively.

Canal
revenues.

Canal revenue is direct or indirect. The former is paid by the cultivator according to occupier's rates fixed for different crops. It is assessed on all the great perennial canals by the canal officers, and the rules provide liberal remissions for failed crops. The indirect charges (owner's or water-advantage rate) aim at taxing the landowner for the rent or profits derived by him from the canal. The gross receipts averaged 50 lakhs between 1881 and 1890, 102 lakhs between 1891 and 1900, and amounted to 162 lakhs in 1900-1 and 200 lakhs in 1903-4. In the same periods the expenditure (excluding capital account) was 26 lakhs, 42 lakhs, 60 lakhs, and 66 lakhs. The net profits in 1903-4 were 134 lakhs, and, deducting interest on capital expenditure, 94 lakhs, or 8.7 per cent. The most profitable canal was the Chenāb Canal, which yielded 19.6 per cent. The return on capital has decreased greatly in the case of 'minor' works. This is due to the expenditure of

10 lakhs of capital during the ten years 1881-1890 on protective works, which produced no direct return. The returns from inundation canals fluctuate enormously. For example, on the Upper Sutlej Canals the dividend was only 1.95 per cent. in 1900-1 and as much as 43.2 per cent. in 1901-2.

The efficient distribution of the water depends largely on the telegraph system by which canal officers are kept in constant touch with the gauge stations. Control of the distribution is secured by a systematic devolution of responsibility. The Chief Engineer receives a weekly report on the state of the crops, and is thus enabled to supervise the general distribution of the water throughout the Province; the Superintending Engineer controls its distribution among the divisions of his canal, and so on. Within the village the policy is to leave the distribution of the water in the hands of the cultivators, who see that it is divided in accordance with the share lists based on the area to be irrigated in each holding. On inundation canals the supply depends on the rise of the rivers, and these rarely do more than supply water for sowing a spring crop, which has to be matured by well-irrigation.

A vast irrigation scheme was sanctioned in 1905. It will comprise three new canals: the Upper Jhelum, Upper Chenāb, and Lower Bāri Doāb. Of these, the first will take off from the Jhelum in Kashmir territory, 18 miles from the British border, and, skirting the Pabbi hills, pass close to Gujrāt town and tail in above the head-works of the existing Chenāb Canal. It will have only one branch; but its distributaries, 562 miles in length, will irrigate the southern part of Gujrāt and a part of Shāhpur District, which is not supplied by the Jhelum Canal. The Upper Chenāb Canal will take off from the Chenāb river opposite Siālkot, and will irrigate a large part of Gujrānwāla and Lahore Districts and a little of Siālkot; then, crossing the Rāvi river by a siphon 16 miles below Lahore, it will feed the third canal in the series. This, the Lower Bāri Doāb Canal, will run parallel with the Rāvi river through the whole length of Montgomery District and end in Multān District, the northern portion of which it will also irrigate. These projects are estimated to cost 782 lakhs, and will take nine years to complete, provided that sufficient labour is forthcoming. The total length of the three canals will be 230 miles, with 2,714 miles of distributaries.

The only navigable canals are portions of the Western Jumna and Sirhind systems. The former is navigable from its head to Delhi. A portion of the Hānsi branch is also

System of distribution of water.

Projected canals.

Navigable canals.

navigable, the total length of navigable channels being 207 miles. The Sirhind Canal is navigable for 180 miles from its head at Rūpar, and from the town of Patiala to Ferozepore, where it connects with the river Sutlej, whence there is a continuous water-way to Karāchi. The boat traffic is insignificant, the boat tolls on both together amounting to less than Rs. 5,000 per annum; but there is a considerable raft traffic, &c., particularly on the Western Jumna Canal, where the dues average about Rs. 40,000 per annum. The rafts consist principally of timber, sleepers, scantlings, and bamboos, which are floated down the hills to the canal head, and are thence passed into the canals.

Wells.

Almost all the irrigation carried on by indigenous methods is from wells. In 1903-4 the Punjab contained over 276,000 masonry wells and 38,000 unlined and lever wells and water-lifts. In that year the total area of the crops matured under well-irrigation was about 5,400 square miles. Masonry wells are worked by cattle, the Persian wheel or a rope and bucket being used. Unlined wells are chiefly found in riverain lands, but small unlined wells are also used in submontane tracts with a high water-level. They are mostly worked by a lever. Masonry wells cost from Rs. 150 to Rs. 750 or more according to depth. Unlined wells cost only about R. 1 per foot, but seldom last more than three years.

Other forms of irrigation.

In the Salt Range and the hilly tracts of Gurgaon and Dera Ghāzi Khān, torrents are embanked and the water spread over the fields as required. In the hills and submontane tracts a considerable area, chiefly under rice, is irrigated by small channels (*kūhls*) taken out of a river or stream and often carried along the hill-sides.

Fisheries.

Fish are plentiful in most of the rivers and canals of the Province. In certain Districts the fisheries are leased by Government to contractors, and in 1904-5 the total income from this source was Rs. 4,342. In accordance with the provisions of the Indian Fisheries Act (IV of 1897), certain methods of fishing, such as the use of the drag-net, have been prohibited in some of the streams of Rawalpindi District, and in the Jumna for a mile above and a mile below the Okhla weir at the head of the Agra Canal, while in Sirmūr and the hill-country of Patiala the fish in the Giri and other streams are strictly preserved in the interests of anglers.

Rents, wages, and prices. Rents.

The state under native rule took all, or nearly all, the produce of the land which was not required for the subsistence of the cultivators, and it is only since the value of land has risen

under the more lenient British assessments that anything in the shape of a margin leviable as rent has been in any general way available for the owners of land.

The assessment on land, which under Sikh rule was usually taken direct from the cultivator in kind, is now always taken from the owner in cash, and the latter recovers from the tenant, in kind or in cash, an amount which ordinarily ranges from twice to three times the value of the assessment. The usual practice is to take rent in kind at a share of the produce, and 57 per cent. of the rented area of the Province is now subject to some form of kind rent; but where crops difficult to divide are grown, and in the neighbourhood of towns, or on lands held by occupancy tenants, or in tracts, such as the south-east of the Punjab, where the custom is of some standing, it is not unusual to find rents paid in cash. The exact rate at which a rent in kind is paid is largely a matter of custom; and such rents, while varying considerably from soil to soil, do not change much from time to time. Cash rents, on the other hand, have necessarily increased with the increase in the prices of agricultural produce; and the average incidence of such rents has risen from Rs. 1-13-2 per acre in 1880-1, to Rs. 2-6-5 in 1890-1, and Rs. 4-6-0 in 1900-1.

As nearly one-half of the land in the Punjab is cultivated by the owners themselves, and a fair portion of the rest by owners who pay rent to co-sharers or other owners, the tenant class is neither so large nor so distinctively marked as in the rest of Northern India, and the law affords much less elaborate protection to the tenant than is usual in the United Provinces or in Bengal. A limited number of the tenant class, amounting to nearly one-fifth of the whole, have been marked off by the legislature on certain historical grounds as entitled to rights of occupancy, and the rents of this class cannot be enhanced to a standard higher than $12\frac{1}{2}$ to 75 per cent. (according to circumstances) in excess of the land revenue. In the case of the remaining tenants, who hold at will, no limit is fixed to the discretion of the landlord in the matter of enhancement; but the procedure to be followed in ejectment, and the grant of compensation for improvements legally executed, is provided for by the law in respect of both classes of tenants.

The figures given in the table on the next page are of interest as showing the direction in which rents are developing.

These statistics are subject to a good many reservations which need not be entered into here; but they are sufficient to disprove the usual impression that the increase of the

landowning population entails a withdrawal of land from tenants, and that with the development of the country the practice of kind rents is disappearing.

	1880-1.	1890-1.	1900-1.	1903-4.
Average area held per proprietor	30.8	18.8	17.8	Not available.
Average area of tenant's holding	6.0	3.7	3.3	
Percentage of total cultivated area held by tenants	34.7	46.0	52.3	54.1
Percentage of tenant area held by occupancy tenants	31.3	19.6	17.0	19.0
Percentage of grain-rented to total rented area	49.8	54.1	56.6	57.5

Wages.

With normal prices, the sum required for the food of a labouring family may be taken to be about Rs. $4\frac{1}{2}$ a month, and to this Rs. $1\frac{1}{2}$ a month must be added for a reasonable amount of furniture, clothing, and other necessities. The ordinary unskilled labourer, therefore, looks to get about Rs. 6 a month or its value, and this may be taken as the ordinary rate roughly prevailing. The labourer in a town is usually paid entirely in cash; in the country he is paid either wholly or partially in kind. The country labourer needs a little more food than the town labourer; but whereas the latter has house-rent to pay, the former generally obtains his house at little or no expense to himself. The cultivator who rents but does not own land lives at a standard of comfort very little higher than the landless labourer. As his expenditure, like his income, is almost entirely in grain, and a large part of his food and clothing is produced by himself, it is difficult to estimate his receipts in money; but it would probably be fair to say that, when the ordinary day labourer receives Rs. 6 a month, the receipts of the cultivator after paying his rent would be represented by something like Rs. 7 or Rs. 8, while if the cultivator were also an owner of land his average income, after payment of Government dues, might be put at Rs. 10, or more. Skilled labourers, such as blacksmiths or masons, get about Rs. 16 a month or its equivalent, and carpenters still more. The ordinary vernacular clerk in a commercial or Government office will as a rule get something between Rs. 15 and Rs. 20, but on this he has to maintain a better style of dress and living than men who work with their hands. Wages are now twice or thrice as high as they were in Sikh times, and there has been a progressive rise in recent years. So far as the labourer's food is concerned, its money

value has in the last twenty years increased by 30 to 35 per cent., while the other items of his expenditure have decreased in price; and it would probably be correct to say that during the same period the labourer's wages have risen from 20 to 25 per cent. With artisans the increase has been larger, or from 25 to 30 per cent.

Although there are large piece-goods and other marts at Prices. places like Delhi and Amritsar, no official statistics are maintained regarding the prices of any but agricultural staples. For these, three classes of data are available: the prices obtained by agriculturists at harvest time at a fair number of towns and large villages in each District; the wholesale prices prevailing at the end of each fortnight in six representative cities of the Province; and the retail prices prevailing at the end of each fortnight at the head-quarters of each District. The differences between the figures obtained under the first and second of these heads are due partly to the cost of carriage, and partly also to the want of capital among agriculturists, which necessitates their selling while the market is still low. To illustrate the difference which prevails between the three classes, an example may be taken from one of the central Districts in 1904, when wheat sold at the country markets at harvest time for Rs. 19.5 per ten maunds, whereas at the head-quarters the average wholesale price for the year was Rs. 21 and the average retail price Rs. 22. In making rough calculations for assessment purposes, it is usual to assume that the agriculturist gets 4 annas per maund of 82 lb. less than the recorded average retail prices of the year. The rise of prices in the Province at large is best studied in the retail figures, which are available in greater completeness than the others. A table at the end of this article (p. 155) shows prices for a series of years at Delhi, Amritsar, and Rāwalpindi. In wheat, which is the main staple of the Province, the average rate of increase in the three markets noted is 36.7 per cent. for the period 1880-1900; and if wheat, gram, *jowār*, and *bājra* are dealt with in the proportion in which they are grown, the average joint increase is 35.4 per cent. The mileage of railways within the Province has more than quadrupled in the same period, and the large rise in prices is doubtless due in the main to this improvement in communication, accompanied by the opening of foreign markets.

Village life is still simple and possesses few luxuries. All the articles that the people require, except matches, lamps, and kerosene oil, and, most important of all, piece-goods, are people. Material condition of the people.

surface, the *shisham* (*Dalbergia Sissoo*) often becomes gregarious, and is of some importance, and many other species, such as acacias and the black mulberry, are found. The avenues of *shisham* and other trees planted along roads and canals are an important feature in the scenery of the Province.

The *sāl* tree (*Shorea robusta*) is found in the small submontane forest of Kalesar in Ambāla, in the adjoining State of Sirmūr, and in a few scattered areas in Kāngra District. This is, however, the extreme western limit of its growth, and it can never be expected to attain any great dimensions. The rocky hills of the Salt Range and Kālā-Chitta are in parts covered with an open forest, in which the olive (*Olea cuspidata*) and the *phulāhl* (*Acacia modesta*) are the principal trees.

The hill forests fall into groups classified by their elevation. Hill
Below 3,000 feet they are composed of scrub and bamboo forests.
(*Dendrocalamus strictus*). The bamboo forests are most important in Kāngra, where they cover an area of 14,000 acres; the scrub forests survive in good condition only in places where they have been protected by closure from grazing. Between 2,500 and 5,000 feet of elevation the *chīl* pine (*Pinus longifolia*) is the principal tree. Forests of this tree are found throughout Kāngra proper, in the Murree and Kahūta *tahsils* of Rāwalpindi, and in the lower portions of the valleys of Kulū, Bashahr, and Sirmūr. Between 5,000 and 8,000 feet occurs the true zone of the valuable *deodār* (*Cedrus Deodara*), which grows either in pure forests or mixed with the blue pine (*Pinus excelsa*), the silver fir (*Abies Webbiana*), the spruce (*Picea Morinda*), and trees of various deciduous species. The principal *deodār* forests are found in the Pārbati valley, and around the head-waters and side streams running into the Beās in Kulū, on either side of the Rāvi in Chamba and the Chenāb in Pāngi, in the valleys of the Sutlej and the tributaries of the Jumna in Bashahr, and in Jubbal. In this zone extensive forests of blue pine, pure or mixed with *deodār*, also occur, principally in Kulū and Bashahr. Above 8,000 feet, extensive areas, especially in the zone between 9,500 and 12,500 feet, are covered with silver fir, spruce, and trees of various deciduous species. Approaching 12,500 feet, which is about the limit of tree growth, rhododendron, birch, and juniper are found. The grassy slopes which extend from the limit of tree growth to the line of perpetual snow afford pasturage, and shepherds and herdsmen migrate thither annually with their flocks and cattle.

The administration of all the more important forests is managed.

controlled by the Forest department, under a Conservator. There are twelve Forest divisions, including those of the Bashahr and Chamba States, the forests of which are leased by the Punjab Government. The forests of the Simla Hill States are under the general care of the Simla Forest officer, who advises the chiefs. In 1904 the land under the Forest department amounted to 9,278 square miles, of which 1,916 were completely 'reserved,' 4,909 'protected,' 1,914 'unclassified,' or given over with some restrictions to the use of the public, and 539 'leased.' There were also 112 square miles of 'reserved' forest, and square miles of 'unclassified,' under the Military department; and other civil departments had charge of 4 miles of 'reserved,' 10 acres of 'protected,' and 7,033 square miles of 'unclassified' forests, the last being chiefly waste land in the charge of Deputy-Commissioners.

All *deodār* forests of commercial importance are worked in accordance with working plans, prepared by the Forest department and sanctioned by the Local Government. Under their prescriptions 7,140 *deodār* trees are allowed to be cut annually, and the annual yield of *deodār* timber from the forests under the control of the department is estimated at 659,000 cubic feet. This timber, together with a certain amount of blue pine and *chil*, is floated down the various rivers to the plains, where it is sold to railways for sleepers, or to the public. Efforts are now being made to introduce exploitation by private enterprise. The *chil* forests of Murree and Kahūta are also under a working plan, and for those of Kāngra a plan is in preparation. In the Kāngra forests the *chil* trees are systematically tapped for resin. The spruce and fir forests are for the present principally of value as grazing-grounds, and for supplying local requirements in forest produce. They hold, however, enormous stocks of timber, which may eventually become of commercial value. The scrub forests below 2,500 feet and much of the plains forests are managed as grazing-grounds. The bamboo forests of Kāngra form a valuable property, yielding an annual surplus revenue of about Rs. 20,000.

Fuel and
fodder
reserves.

All closed forest areas in the lower hills and in the plains may be regarded as fuel and fodder reserves. In times of drought such areas are opened to grazing, and if necessary to lopping, so as to enable the people to keep their cattle alive until the occurrence of more favourable seasons. The area of forest land in the plains is rapidly decreasing as colonization schemes are extended, and the consequent contraction of fuel and fodder-producing areas may be felt in the future.

Chānga Mānga in Lahore District contains a plantation of 8,872 acres fully stocked with *shisham* and mulberry, and there are smaller *shisham* plantations at Shāhdara in the same District, and at Jullundur, Ludhiāna, and Jagādhri. Efforts have been made for many years past to increase the stock of *deodār* in the hill forests by artificial sowings and plantings, which have been to a certain extent successful.

The wants of the people are fully provided for by the various forest settlements, which record their rights to timber, fuel, grazing, &c., in the Government forests; and in some places the inhabitants have the first option of taking grazing leases, and buying the grass from the adjoining forests. The relations of the department with the people are satisfactory, and offences against the forest laws are usually trivial and are becoming less numerous.

Attempts are made to protect all the more valuable forests from fire. Fortunately the valuable *deodār* forests are but little exposed to this danger, but the *chil* forests become highly inflammable in the hot season. The local population at first resented the restrictions imposed by fire conservancy, and many cases of wilful firing of forests used to occur; but such occurrences are now happily less frequent, and the people often give willing help in extinguishing fires in Government forests.

The financial results of the working of the department are shown below :—

	1880-1 to 1889-90 (average).	1890-1 to 1899-1900. (average).	1900-1.	1905-1.
	Rs.	Rs.	Rs.	Rs.
Revenue . . .	7,74,362	10,06,412	12,60,234	16,51,077
Expenditure . . .	5,49,045	7,08,100	8,35,799	9,35,918
Surplus . . .	2,25,317	2,98,312	4,24,935	6,95,159

Forest revenue is principally realized from the sale of *deodār* timber, which produces about 6 lakhs annually, sales of other timber amounting to only Rs. 60,000. The other chief items are sale of fuel (Rs. 4,60,000), and grazing and grass (Rs. 1,64,000).

The Punjab is not rich in minerals; and nearly all its mineral wealth is found in the hills, the only products of the alluvium being *kankar* or nodular limestone, saltpetre, carbonate of soda, and sal-ammoniac.

Saltpetre is found on the sites of used and disused habitations, generally associated with the chlorides of sodium,

magnesium, or potassium, and the sulphates of sodium, potassium, or calcium. The initial process of manufacture, which consists in allowing water to percolate slowly through the nitrous earth, results in a solution not merely of nitre but of all the associated salts. The separation of the nitre from the rest is the work of the refiner. Refineries exist all over the Province and pay an annual licence fee of Rs. 50, while for the initial process the fee is Rs. 2. Saltpetre is exported to Europe, and is also largely used in India in the manufacture of fireworks and gunpowder for blasting. In 1903-4 there were 35 refineries in the Punjab. These produced 73,917 cwt. of refined saltpetre, the out-turn being nearly 41 per cent. of the crude substance. Impure salt (*sitta*) to the amount of 58,322 cwt. was also educed, the out-turn being over 32 per cent. of the saltpetre so utilized. Of this amount only 4,091 cwt. were excised at Rs. 1-5-9 per cwt. (R. 1 a maund), 54,496 cwt. being destroyed. Pure salt is not educed. An important saltpetre refinery exists at Okāra in Montgomery District.

Kankar.

Carbonate
of soda.

Sal-ammo-
niac.

The only other important mineral product of the plains is *kankar*, or conglomerated nodules of limestone, used for metalling roads, which is found in most parts. Carbonate of soda (*barilla*) is made from the ashes of various wild plants, chiefly in the west and south-west of the Province. Sal-ammoniac is manufactured in Karnāl, by burning bricks made of the clay found in ponds and heating the greyish substance which exudes from them in closed retorts.

Salt and
gypsum.

The most valuable mineral is rock-salt, which, with gypsum, forms immense beds in the Salt Range. It is worked in that range at KHEWRA and NŪRPUR in Jhelum District, at KĀLĀBĀGH in Miānwāli, and at WĀRCHA in Shāhpur. Salt is also manufactured at Sultānpur, in Gurgaon District, by evaporation of the saline subsoil water. Salt, dark in colour and containing a large proportion of earth and other impurities, is quarried at Drang and Guma in the State of Mandi. The total amount of salt made and sold in the Punjab rose from 79,295 tons in 1880-1 to 84,338 tons in 1890-1, 94,824 tons in 1900-1, and 105,163 tons in 1903-4. The average output of the Salt Range and Mandi mines in the six years 1898-1903 was 93,698 tons, of which 89,023 came from the Salt Range; the output of the Salt Range in 1904 was 99,192 tons. Large deposits of gypsum occur in Spiti and Kanāwār, but too inaccessible to be at present of any economic value.

Coal.

Although the existence of coal at numerous points throughout the Salt Range had long been recognized, no attempts

were made to work it until recently, except at the large colliery near Dandot in Jhelum District. Within the last few years, however, prospecting licences have been taken out at Kālābāgh on the Indus in Miānwāli District, a few other places in Jhelum, and Sandral in Shāhpur; and great hopes are entertained that the coal will prove to be of a paying quality. The Dandot Mines have been worked since 1884 by the North-Western Railway. There is only one seam of coal, which outcrops at various points along the hill-side at a mean distance of 300 feet below the limestone scarp, which here rises 2,300 feet above sea-level. The seam averages 2 feet 9 inches in thickness, and is worked on the long-wall system, all the coal being taken out in one operation. The mines are entered by level or inclined tunnels from the hill-side, the longest stretching 900 yards under the hill. From the mouth of each tunnel the coal is conveyed on an inclined tramway to the edge of the hill, whence a funicular railway runs down the cliff to the North-Western terminus at Dandot. The coal is classed as a bituminous lignite, and, though low in fixed carbon, has a relatively high calorific value. About 1,500 men are employed on the mines, at a daily wage of 8 annas for a miner and $3\frac{1}{2}$ or $4\frac{1}{2}$ annas for a cooly. The workers are chiefly agriculturists, who leave the mines when their fields claim all their time, to return to them again when the crops need less attention. Very few can really be called miners. Makrānis were at one time imported from Karāchi, but the experiment was not a success. In 1891 the out-turn was 60,703 tons, in 1901 67,730, and in 1904 45,594 tons. In 1901 it was estimated that three million tons remained to be worked.

There are no gold-mines in the Punjab, but gold-washing is Gold. carried on at various places in the upper reaches of most of the rivers. The industry is not remunerative, a hard day's work producing gold to the value of only 2 or 4 annas¹. The total recorded output in 1904 was 370 oz.

Iron is found in Kāngra District at several points along the Iron. Dhaola Dhār, in the form of crystals of magnetic oxide of iron imbedded in decomposed and friable mica schists. The supply is practically inexhaustible, and the quality of the ore is equal to the best Swedish iron. The remoteness of the tract, combined with difficulties of carriage and absence of fuel, have hitherto prevented smelting on a large scale. Besides iron, antimony ore is found. Iron mines are also worked at Kot Khai in Simla, and in the Hill States of Jubbal, Bashahr,

¹ *Punjab Products*, by Baden Powell, pp. 12, 13.

Multān are more ornate. A special cloth made of a mixture of cotton and wool called *garbi loi* is woven in Gurdāspur District and exported all over India. The glazed fabrics, especially the diāper called *ghāti* or *bulbulchashm* or 'nightingale's eye,' of Jullundur are also famous. Cotton rugs, *daris* or *shatranjis*, are turned out at Lahore and Ambāla. Cotton-pile carpets are made at Multān, but recent productions indicate that a crude scheme of colours has ruined the beauty of this manufacture. Cotton-printing is carried on in many parts of the Punjab, and the productions of Kot Kamālia, Sultānpur, and Lahore are specially famous. The printing is done by hand by means of small wooden blocks. Within recent years fairly large quantities have been exported to Europe and America, but the trade is declining owing to the fashion having changed.

Sheep's wool is largely produced in the plains, and is woven Wool. or felted into blankets and rugs. Dera Ghāzi Khān and Bhera produce coloured felts (*namdās*) in considerable quantities. The finest wool is that of Hissār, and the western Districts also produce a fair quality. Some of the wool worked up in the Province is imported from Australia, most of this being utilized by the power-loom mills at Dhāriwāl. Of greater interest, however, are the manufactures of *pashm*, the fine hair of the Tibetan goat. This is imported through Kashmīr, Kulū, and Bashahr, and supplies Ludhiāna, Simla, Kāngra, Amritsar, and Gujrāt, the chief seats of artistic woollen manufacture. The industry dates from early in the nineteenth century, when famine drove numbers of artisans from Kashmīr to seek a home in the Punjab. Real Kashmīr shawls continued to be made until the Franco-German War, when the demand ceased; and the manufacture of *pashmīna*, or piece-goods made from *pashm*, is now confined to *ālwaṇs* or serges, curtains, and ordinary shawls. In many Districts sacking, coarse blankets, and rugs are made of goats' and camels' hair.

Practically the whole of the silk used in the Punjab is Silk. imported from China. It is woven in most parts, the chief centres being Amritsar, Lahore, Patialā, Batāla, Multān, Bahāwalpur, Delhi, and Jullundur, where both spinning and weaving are fairly important industries. The articles manufactured may be divided into three classes: woven fabrics of pure silk, woven fabrics of silk and cotton, and netted fabrics of silk or silk and cotton, of which the second are being turned out in largely increasing quantities. Turbans and waistbands (*lungīs*) of cotton cloth with silk borders woven on to them

are also very largely made. Netted silk is made in the form of fringes, tassels, girdles, *paijāma* strings, &c.

Embroidery.

Many kinds of wearing apparel are decorated with embroidery. The wraps called *phūlkāris* ('flower-work') are in most Districts embroidered with silk, and the industry has grown from a purely domestic one into a considerable trade, large numbers being exported to Europe for table-covers and hangings. Very similar are the *orhnās* of Hissār, which are embroidered in wool or cotton. Delhi is the centre of the trade in embroideries, in which gold and silver wire, as well as silk thread, is largely used, on silk, satin, and velvet. The purity of the manufacture is guaranteed by the municipality, which supervises the manufacture, fees being paid by the artisans to cover expenses. This practice, a relic of native rule, is highly popular among the workmen, who thereby get a guarantee for the purity of their wares. The embroidery is applied chiefly to caps, shoes, belts, uniforms, turbans, elephant trappings and the like, besides table centres and similar articles of European use.

Carpets and rugs.

The carpet-weaving of Amritsar is a flourishing and important industry, and its products are exported to all parts of the world. *Pashm* is used for the finest carpets, and the work is all done by hand. Woollen carpets used to be made at Multān, but owing to the competition of Amritsar the industry is now confined to the manufacture of mats. Felt mats called *namdās* are made of unspun wool and embroidered.

Jewellery.

Ornaments are universally worn, and Punjābi women display jewellery as lavishly as those in any other part of the plains of India. It has been estimated that Amritsar city alone contains jewels to the value of two millions sterling, and the workers in precious metals in the Province considerably outnumber those in iron and steel. Gold is mainly confined to the wealthier classes, and is not largely worn by them except on special occasions; whereas silver ornaments are in daily use by all but the poorer classes. The late Mr. Baden Powell¹ gave a list of ninety-nine names for ornaments used in the Punjab, and the list is by no means exhaustive; it includes ornaments for the head, forehead, ears, nose, neck, arms, and waist, with bracelets, anklets, and rings for the toes and fingers in great variety. The general character of the gold and silver-work is rough and unfinished. Superior work is turned out at Amritsar and Delhi, and at the latter place a good deal of jewellery is made for the European market.

¹ *Punjab Manufactures*, pp. 181-4.

Iron is largely smelted in Kāngra and Simla Districts, but Ironwork. the out-turn is insignificant compared with the amount imported into the Punjab. Lahore used to be famous for the manufacture of weapons, but the industry is now extinct. In Gujranwāla and at Bhera in Shāhpur District cutlery is made, but the production is irregular. The finish of these articles, though not perfect, is better than the quality of the steel, which is tough but deficient in hardness. Damascening or inlaying small articles of iron with gold wire is carried on in Siālkot and Gujrāt Districts. Agricultural implements are made by village blacksmiths, who are also often carpenters. In Lahore ironwork has been considerably improved under the influence of the North-Western Railway workshops.

All the brass and copper used is, in the first instance, Brass and copper manufactures. imported, chiefly from Europe. Formerly copper was obtained from Kābul, but the import has entirely ceased. Various copper and zinc ores, found in the Kulū hills and other parts of the Himālayas, used to be mined, but the imported metals are so cheap that there is no immediate likelihood of the mines being reopened. European spelter, chiefly German, has long since driven the Chinese zinc out of the market. Both yellow and grey brass (or bell metal) are manufactured in the Punjab. Brass-ware is either hammered or cast; copper-ware is either cast or made of sheet copper soldered together. The industry is limited to the manufacture of domestic utensils, which are only roughly ornamented. The chief centres of the manufacture are the towns of Rewāri, Delhi, Jagādhri, Pānpat, Gujranwāla, Amritsar, Pind Dādan Khān, and various places in Siālkot District.

Rough unglazed pottery is made in nearly every village, the Pottery. potters being generally village menials who supply the villagers' requirements in return for a fixed share of the harvest. Unglazed pottery of a rather better kind is made at Jhajjar, and thin or 'paper' pottery at Pānpat, Jhajjar, Jullundur, Tānda, and a few other places. Glazed pottery is made at Multān. Originally confined to the manufacture of tiles, there is now a large trade in flower-pots, plaques, vases, &c. The predominant colours are light and dark blue, brown, and green. Porcelain of disintegrated felspathic earth, mixed with gum, is made at Delhi. China clay is found near Delhi and in the Himālayas, but has not hitherto been utilized. The manufacture of glass is mainly confined to the production of glass bangles. Bottles, glasses, mirrors, lamps, lamp-chimneys, and other articles are made at Karnāl, Kāngra, Hoshiārpur, Lahore, and Delhi.

Wood-carving and furniture.

Wood-carving as an indigenous art is almost entirely architectural, but devoted to doors and doorways, balconies and bow windows. Apart from the hill work, which has a character of its own, the wood-carving of the Punjab may be divided into three styles: the earliest or Hindu, the Muhammadan, and the modern Sikh style. Examples of the Hindu work are to be seen principally in the large towns, particularly at Lahore. The forms used are fantastic, tassel shapes, pendants, and bosses being predominant; but the style, except for a very recent revival, may be said to be extinct. With the Muhammadans came the development of lattice-work or *pinjra*, which is to this day the characteristic feature of Punjab wood decoration. Most of the old doorways and *bukhārchās* to be seen in frequent profusion in the old towns belong, broadly speaking, to this style of work. The Sikh style, the work of the present day, may be said to be a modern adaptation of the Muhammadan, with occasional Hindu influence underlying it. It is characterized by clear-cut carving, broad treatment, and as a rule fairly good joinery. The best wood-carvers are to be found at Amritsar, Bhera, Chiniot, and Batāla. Of late years the European demand has led to this handicraft being largely applied to small articles of decorative furniture.

Inlaid work.

Inlaid work is also of Muhammadan origin, and was probably introduced from Arabia. The chief centres are Hoshiārpur and Chiniot. The wood inlay-work of Hoshiārpur has a high local reputation, and is capable of considerable development. For many years pen-cases, walking-sticks, mirror-cases, and the low *chauki*, or octagonal table, common in the Punjab and probably of Arab introduction, have been made here in *shisham* wood, inlaid with ivory and brass. Since 1880 tables, cabinets, and other objects have also been made, and a trade has sprung up which seems likely to expand.

Lacquer-work.

Turned wood ornamented with lac in various combinations of colours is produced in almost every village. Pakpattan has more than a local reputation for this work, while a family in Ferozepore produces a superior quality.

European furniture.

Furniture after European patterns is made in every station and cantonment, the best-known centres being Gujrāt and Kartārpur in Jullundur District. Gujrāt is known for its wood chairs, chiefly made of *shisham*, the supply of which is abundant.

Ivory.

Ivory-carving is practically confined to the cities of Amritsar, Delhi, and Patiala, but at the latter place it has greatly declined. Combs, essential to the attire of an orthodox Sikh,

104,496,400 lb., of which more than one-fourth was exported. While the Punjab is of considerable importance as a cotton-producing Province, the staple is short, varying from $\frac{1}{2}$ to $\frac{3}{4}$ of an inch, and occupies a low position in the market.

Woollen industry.

The Egerton Woollen Mills, established at Dhāriwāl in 1880, are the only woollen mills in the Province. The company has a nominal capital of Rs. 12,00,000. Its progress is shown by the following figures :—

	1890-1.	1901.	1904.
Number of looms . . .	115	128	264
„ spindles . . .	4,564	4,320	6,708
„ hands employed	620	820	908

In 1903-4 the mills turned out broadcloths, blankets, great-coats, serges, flannels, tweeds, *lois* and shawls, travelling rugs, knitting yarns, braids, Berlin wool, socks, caps, gloves, and other kinds of knitted goods to the amount of 572,061 lb., valued at Rs. 7,30,118. The native shawl-weaving industry and manufacture of *pattū* and blankets have not been much affected by foreign imports.

Breweries.
Ice.

The Province contains eight breweries, from which nearly 2,000,000 gallons of malt liquors were issued in 1903-4. In 1904 there were 15 ice factories worked by steam, compared with 4 in 1891. The number of indigo factories decreased from 27 to 12. There were, in 1891, two distilleries for the manufacture of spirits according to the European method, but the number has now risen to six. In 1903-4, 273,102 gallons (London proof) of spirits were issued from these. Most of the spirit is made from sugar, but some is whisky distilled from barley malt.

Indigo.
Dis-
tilleries.

Iron foundries.

There were 5 private iron foundries in 1904 : namely, three at Delhi, one at Lahore, and one at Siālkot. Steel trunks and boxes are made in large numbers at Multān, Lahore, and Siālkot. At the place last mentioned surgical instruments are made by an enterprising firm. The most important iron-works, however, are the North-Western Railway workshops at Lahore.

Protection of operatives.

Factory operatives are protected by the Indian Factories Act, revised rules under which were promulgated in 1892. The orders of the Inspectors have been enforced without difficulty, and very few prosecutions under the Act have been necessary. In 1892 there were 34 factories in which steam-power was used. The number has now risen to 175. While the conditions of labour of the mill operatives has been decidedly improved, it does not appear that there has been

any tendency for wages either to rise or fall during the last ten years. The highest rates are paid in the Government workshops on the North-Western Railway, where many skilled mechanics are employed. The ordinary rates in private factories are 3 annas to 5 annas a day for male operatives; 2 annas to 4 annas for women and children; and from Rs. 30 to Rs. 60 a month for skilled mechanics.

The condition of skilled artisans in the indigenous industries of the Punjab, such as carpet-weavers, leather-workers, brass-workers, is not favourable. The capitalists in some cities formerly safeguarded their interests by a trade practice, according to which, when a workman left one employer for another, the second employer was held to be liable to the first to the extent of all advances received, and the thralldom of the artisan to the second employer was maintained. This trade practice has recently been declared illegal by several decisions of the Chief Court, and the growing competition among capitalists for the service of workmen is beginning to have its natural effect in strengthening the position of the artisan. The present transitional stage from the guild or caste system to the system of free competition between capital and labour is one of much interest to the student of sociology. The change is, however, as yet only in its initial stages, and has scarcely affected the village artisans, who still receive their customary dues in kind, and are almost as much dependent on the nature of the harvests as the agriculturists themselves. In towns also the hereditary nature of many caste industries, and the tradition of preserving the trade secrets within the trade caste, still continue. The freedom to learn where and what one wills has not yet been obtained, but is being gradually brought about by the competition of capital for labour, by the industrial schools, and the introduction of steam-power and factory labour, which, having no caste tradition, is open to all.

Prior to annexation the Punjab proper had practically no trade with the rest of India. It had no surplus agricultural produce to export, and the anarchy which ensued on the decay of the Mughal empire was an effectual barrier to commercial enterprise. Ranjit Singh's policy aimed at excluding British traders from his kingdom, while the earliest efforts of the British Government were directed to opening up the water-way of the Indus. Since annexation the security afforded to person and property, the improvement of communications, and above all the extension of canal-irrigation, have vastly developed the agricultural resources of the Province.

Artisans
in the
indigenous
industries.

Commerce
and trade.
Trade
prior to
annexation.

General
character
of trade.

The main source of the wealth of the Punjab lies in its export of wheat, of which the largest amounts exported were 550,911 tons in 1891-2, 457,991 in 1894-5, 493,826 in 1898-9¹, 623,745 in 1901-2, 536,374 in 1902-3, and 877,022 in 1903-4. Next to wheat, raw cotton is the principal export, and besides wheat inferior grains are exported on a large scale, chiefly to Southern Europe. During the ten years 1891-1900 the value of the agricultural produce exported exceeded that of the amount imported by an average of nearly 438 lakhs a year, a sum which considerably exceeds the total land revenue, with cesses and irrigation rates, levied in the Province.

Among imports, cotton piece-goods, European and Indian, stand first. The imports of the former fluctuate greatly. Valued at 218 lakhs in 1890-1, they had fallen to 190 lakhs in 1900-1, but rose to 253 lakhs in 1901-2, falling again to 231 lakhs in 1903-4. Indian-made piece-goods, however, tend to oust the European, the imports of the former having increased threefold in value between 1891 and 1904. In the case of twist and yarn this tendency is even more marked. The other considerable imports are iron and steel, sugar, wool (manufactured), gunny-bags and cloth, dyes and tans, and liquors. Wheat and gram are also imported in times of scarcity. The well-to-do classes in the Punjab consume wheaten bread, even when wheat is at famine prices, and are not content with a cheaper grain. Hence the imports of wheat vary inversely with the out-turn of the local wheat harvest. In the prosperous year 1898-9 the value of the wheat imported was only 6 lakhs: the poor harvest of 1899-1900 raised it to 29 lakhs, and, the scarcity continuing into 1900-1, to over 41 lakhs in the latter year. Good harvests in 1901-2 and 1903-4 reduced it to 8 and 10 lakhs respectively. The import statistics of the coarser and cheaper food-grains, such as gram and pulse, are an index to the purchasing power of the poorer classes. Less than 8½ lakhs in value in 1898-9, the imports of these grains exceeded 87 lakhs in 1899-1900, falling to 39 lakhs in 1900-1 and 5½ in 1903-4. The figures show that in periods of acute distress the poorer classes are compelled to fall back on inferior grains, until better harvests and lower prices permit them to resume their wheaten diet.

Trade
centres.

The development of the export trade in wheat has created

¹ All figures for the year prior to 1900-1 on pp. 86-8 include the trade of the North-West Frontier Province, whether internal or external (i.e. within India or with other Asiatic countries, including Kashmir), and those for the subsequent years its internal trade alone.

new centres of trade, in places favourably situated on the lines of communication, especially on the Southern Punjab Railway and on the line from Wazirābād through the Chenāb Colony. Along the former large grain markets have been established at Rohtak, Kaithal, Bhatinda, and Abohar. The last-named, ten years ago a petty agricultural village, has now become a considerable trade centre, and has attracted much of the wheat trade from Fāzilka. In the Chenāb Colony important trade marts have been established at Gojra, Lyallpur, Sāngla, Chiniot Road, and Toba Tek Singh. Kasūr in Lahore District has likewise benefited at the expense of Ferozepore. Imports are distributed chiefly through the cities and larger towns, such as Delhi, Lahore, Amritsar, and Multān. A Punjab Chamber of Commerce, with its head-quarters at Delhi, has recently been established.

The trading castes are the Khattrīs in the centre and north, the Baniās in the east, and the Aroras in the west. The village trader is the collecting and distributing agent, but he almost always combines money-lending with shopkeeping. Nearly every cultivator is his client, and to him much of the agricultural produce of the village is handed over at a low price, to liquidate debts which have sometimes accumulated for generations. To this, however, there are notable exceptions, the Sikh and Hindu Jats being often themselves keen traders. Moreover, in the case of wheat, the exporter often deals direct with the cultivator, and in the east of the Province many cultivators in the slack season fill their carts with produce and set out to sell it in the best market they can find. Most towns are centres for the collection of agricultural produce, and, as mentioned above, many large grain markets have been established along the lines of rail. These usually have the advantage of being free from municipal octroi duties which, in spite of the system of refunds and bonded warehouses for goods in transit, more or less hamper commerce. No statistics are available to show the volume of this internal trade.

The trade outside the Province is almost entirely with other Provinces and States in India, the amount that comes over the passes from Central Asia being relatively insignificant. More than 90 per cent. of the recorded exports and a still higher proportion of the imports are carried by rail, the remainder being borne partly by rail and partly by boat on the Indus to and from Sind and Karāchi. The bulk of the trade of the Province is with Karāchi, which in 1903-4 sent 37 per cent. of the imports and received 54 per cent. of the exports. Bombay and

Organiza-
tion of
internal
trade.

Organiza-
tion of
external
trade.

Calcutta together accounted for 27 per cent. of the imports and 14 per cent. of the exports, and the United Provinces for 23 per cent. of the imports and 19 per cent. of the exports. Wheat, raw cotton, oilseeds, hides, raw wool, and a certain amount of inferior grains go to Karāchi, in exchange for cotton and woollen piece-goods, sugar, metals, and railway plant and rolling stock. The trade with the other seaport towns is on the same lines. Bombay takes a large amount of raw cotton, and sends silk, tea, and tobacco. Hides and skins, leather, dyes, and tans go largely to Calcutta, whence comes a great deal of the wearing apparel, jute, and woollen piece-goods imported. Cotton and woollen manufactured goods are exported to the United Provinces, which send sugar, coal and coke (from Bengal), *ghī*, gram, and pulse.

Trade
with
Kashmīr.

The trade with Kashmīr is partly by the Jammu-Kashmīr Railway, and partly by the roads leading into the Districts of Gurdāspur, Siālkot, Gujrāt, Jhelum, and Rāwalpindi in the Punjab and Hazāra in the North-West Frontier Province. In the table attached to this article (p. 157) the figures for 1903-4 exclude the trade through Hazāra, now a District of the North-West Frontier Province. The trade with Ladākh passes either through Kashmīr or over the Bāra Lācha (pass) into the Kulū subdivision of Kāngra. The chief imports from Kashmīr are rice and other grains, *ghī*, timber, oilseeds, manufactured wool, raw silk, hides and skins, and fruits; and the chief exports to Kashmīr are cotton piece-goods, wheat, metals, tea, sugar, salt, and tobacco. *Charas*, borax, and ponies are the principal imports from Ladākh, and metals and piece-goods are the chief exports thither.

Trade with
countries
beyond
India.

The direct trade with countries beyond India is small, being confined to that with Chinese Tibet, and an insignificant trade with Kābul through Dera Ghāzi Khān. Trade from Chinese Tibet either comes down the Hindustān-Tibet road to Simla, or enters Kulū from Ladākh or through Spiti. The chief imports are raw wool and borax, and the chief exports are cotton piece-goods and metals. The chief imports from Kābul are fruit, *ghī*, and raw wool; the chief exports are piece-goods, rice, leather, and sugar. The trade with Kābul, which passes down the main trade routes, as well as that with Tīrāh, Swāt, Dir, Bajaur, and Buner, is registered in the North-West Frontier Province; much, however, passes through to the Punjab, and beyond it to the Lower Provinces of India.

Communi-
cations.
Railways.

The Punjab is well provided with railways. Karāchi, its natural port near the mouths of the Indus in Sind, is directly

connected with the Punjab by the broad-gauge North-Western State Railway from Lahore. Delhi is in direct communication with Karāchi by another line passing through Rewāri and Merta Road Junctions, and also by the Southern Punjab Railway, which runs along the southern border of the Province to join the Karāchi line at Samasata. Karāchi has recently been brought into closer contact with Ludhiāna by the new branch of the Southern Punjab Railway from Ludhiāna via Ferozepore and McLeodganj Road. The north-west corner of the Province is directly connected with Karāchi by the branches of the North-Western Railway, which leave the main line at Campbellpur, Golra, and Lāla Mūsa and converge at Kundiān, whence the Sind-Sāgar branch follows the east bank of the Indus and joins the Karāchi branch at Sher Shāh. The new Wazīrābād-Khānewāl line taps the fertile Chenāb Colony in the Rechna Doāb and also connects with Karāchi via Multān. The Jech Doāb line commences from Malakwāl, a station on the Sind-Sāgar branch of the North-Western Railway, and ends at the Shorkot Road station of the Wazīrābād-Khānewāl branch. Another small line is under construction from Shāhdara, 3 miles north of Lahore, to Sangla Hill on the Wazīrābād-Khānewāl Railway. It will serve as an outlet to the immense grain traffic in the interior of the Chenāb Colony.

In the east of the Province the country is covered with a network of branch lines, of which the Delhi-Umballa-Kālka, Simla-Kālka, Rājputana-Bhatinda, Bhatinda-Ferozepore, and Ludhiāna-Dhūrt-Jākhāl are the most important. The Rewāri-Bhatinda-Fāzilka (metre-gauge) State Railway links up the important junction of Bhatinda with the Rājputana-Mālwa line, which also connects with Delhi. The Delhi-Agra branch of the Great Indian Peninsula Railway has recently been opened. In the centre of the Province a branch of the North-Western Railway, recently opened, connects Amritsar with Patti, a town in Lahore District.

The oldest railway is that from Amritsar to Lahore, opened in 1862. That from Multān to Lahore linked up the capital with the Indus Flotilla in 1865; but it was not till 1878 that its extension north-westwards began, and only in 1883 was through communication from Peshāwar to Calcutta and Bombay established. Meanwhile Amritsar and Rewāri had been linked with Delhi in 1870 and 1873 respectively; and though no farther extensions were made till 1883, progress was rapid after that year. In 1891 the Province contained 2,189 miles

ever, true that they are tending to erase local variations in speech, dress, manners, and customs, and to obliterate the few restrictions which the caste system in the Punjab imposes on the ordinary intercourse of daily life.

The chief road is a continuation of the grand trunk road, Roads. which, starting at Calcutta, runs through Northern India to Delhi. Thence, in the Punjab, it passes through Karnāl, Ambāla, Ludhiāna, Jullundur, Amritsar, Lahore, Jhelum, Rāwalpindi, and Attock, where it enters the North-West Frontier Province and ends at Peshāwar, with a total length of 587 miles, metalled and bridged throughout. The section from Karnāl to Ludhiāna was made in 1852, but that from Phillaur to the Beās was only completed in 1860-1. From the Beās to Lahore the road was opened in 1853, and thence to Peshāwar in 1863-4. It runs alongside the railway, and still continues to carry a certain amount of slow traffic. The other roads are mainly important as feeders to the railway system. On the north the chief routes are the Hindustān-Tibet road, which runs from the Shipki Pass on the frontier of the Chinese empire to the railway termini at Simla and Kāika; the Kāngra Valley cart-road, which brings down tea and other hill products to Pathānkot; the Dalhousie-Pathānkot road; and the Murree-Rāwalpindi road, which now forms the main route from Kashmīr. All these, except the Dalhousie road, are metalled, and all are practicable for wheeled traffic, except that part of the Tibet road which lies north of Simla. In the centre of the Province a metalled road runs in a loop from Lahore via Kasūr and Ferozepore to Ludhiāna, where it rejoins the grand trunk road. The other metalled roads are merely short feeders of local importance connecting outlying towns, such as Hoshiārpur and Kapūrthala, with the railways. As feeders and for local traffic unmetalled roads suffice for the requirements of the people, and the construction of metalled roads has accordingly been of recent years subordinated to that of railways, at least in the plains. Thus in 1880-1 the Province contained 1,381 miles of metalled roads, and though in 1900-1 the mileage had risen to 1,916, in 1903-4 it was only 2,054, compared with 20,874 of unmetalled roads. All roads, except 147 miles of strategic roads in Dera Ghāzi Khān District, are maintained from Provincial or District funds. Most of the important metalled roads are Provincial, while unmetalled roads are maintained by District boards, their metalled roads being often made over to the Public Works department for maintenance. The total annual expenditure

on land communications is about 4 lakhs for original works, and 10 to 12 lakhs for repairs.

Vehicles.

The chief means of transport of goods by road is the bullock-cart. This is a heavy substantial vehicle without springs or tires, and made by any village carpenter. It is drawn by a pair of bullocks at the rate of 2 miles an hour, and 10 to 15 miles are reckoned a fair day's journey. It will stand the roughest usage and the worst roads, and only in the hills and in the sandy tracts does its weight render its use impossible. In the sandy deserts bordering on the Bikaner desert, and in the Sind-Sāgar Doāb, including the Salt Range, the camel is the chief means of transport of merchandise, while in the Himālayas goods are carried on mules or by bearers. For passengers by road the light springless cart known as the *ekka* is the almost universal means of locomotion; it will carry four to six passengers, and go at the average rate of 5 miles an hour. On metalled roads, the 'tuntum,' a vehicle with springs not unlike a dog-cart, is much in use. On the important cart-roads to the hills regular passenger services are maintained by means of a two-wheeled carriage called a 'tonga,' drawn by two ponies; at every 4 miles there are stages at which ponies are changed, and journeys are performed at the rate of about 8 miles an hour. Regular services of bullock-carts are also maintained on these roads.

Rivers.

All the great rivers are navigable in the rains; and the Indus and the lower reaches of the Jhelum, Chenāb, and Sutlej are navigable throughout the year. Except on the Indus, timber is the most important article of commerce transported by this means. There is a considerable trade on the Indus with Sind. Navigation on all rivers is entirely by means of rude country craft, the Indus Steam Navigation Flotilla having ceased to exist some twenty years ago. The grand trunk road crosses the Rāvi, Jhelum, and Indus by roadways attached to the railway bridges, and the Chenāb by a footway; and roadways cross the Sutlej between Lahore and Ferozepore, and the Chenāb between Multān and Muzaffargarh. There is a bridge of boats on the Rāvi near Lahore; and the Indus is crossed by bridges of boats at Khushālgarh, Dera Ismail Khān, and Dera Ghāzi Khān, the latter two replaced by steam ferries in the summer. All the rivers are provided with ferries at frequent intervals, which are generally managed by the District boards.

Post Office.

The Districts and States of the Punjab (except the States of Chamba, Jind, Nābha, and Patiala, which have their own

Sharakpur and Ajnāla *tahsils* (in Lahore and Amritsar Districts respectively) are also insecure. But hitherto famines have been frequent and severe only in the south-eastern tract, of which Hissār is the centre. This area lies on the edge of the sphere of influence of the south-eastern monsoon, and any deflexion of its currents leaves it almost rainless; but the Western Jumna and Sirhind Canals, especially the former, have greatly circumscribed the area liable to famine. In the north-west the rainfall, though liable to fail, is much less capricious than in the south-east, and here scarcity has never deepened into serious famine. Well-irrigation in the insecure tracts is largely impossible or unprofitable, owing to the depth of the water below the surface.

Generally speaking, the autumn crops used to provide the agricultural population in the Punjab with their staple food and most of the fodder for the cattle, the spring crops only being grown for profit. To a great extent this still holds good, especially as regards fodder; but of late years the area under spring crops has greatly increased, and now, even in the insecure tracts, it almost equals that under autumn crops. The loss of a single harvest, or even of both the annual harvests, does not in itself necessitate measures of relief. Such measures are required only after a succession of lean years, and thus the point when failure of the monsoon spells famine can, as a rule, be accurately gauged. Besides a rise in prices, not always a very trustworthy sign, indications of the necessity for measures of relief are usually afforded by the contraction of private charity and credit, activity in the grain trade, increase in crime, and aimless wandering in search of employment or food.

History of
famines.

The first famine in the Punjab of which any information exists occurred in 1783-4 (Samvat 1840), and is popularly called the *chālīsa kāl*, or 'famine of the year 40.' It affected the whole country from the Sutlej to Allahābād, and was acute in the neighbourhood of Delhi. Hariāna was desolated and the people perished or emigrated. The mortality must have been great, and few villages now existing in this area boast a history anterior to the famine. Famine again occurred in 1833-4, 1837-8, 1860-1, 1868-9, 1877-8, 1896-7, and in 1899-1900. In 1833-4 the conditions were those of severe scarcity rather than of famine; and though there was suffering in Hissār and Rohtak Districts and the Fāzilka *tahsil*, no relief, beyond large suspensions of revenue, was given. The scarcity was, however, the precursor of serious famine in 1837-8, when the tract between Allahābād and Delhi was most

famine protection, the Province is as a whole well off, and further schemes are in hand for facilitating distribution of the immense surplus stocks produced in the large canal colonies. As to the latter, much has been done and much more is in contemplation. The Chenāb and Jhelum Canals, by rendering cultivable vast areas of waste, have been of incalculable help in reducing the pressure on the soil in the most thickly populated Districts, and in increasing the productive power of the Province; but, until the insecure tracts themselves are rendered safe by the extension to them of irrigation, scarcity and famine must be apprehended. The new Upper Jhelum, Upper Chenāb, and Lower Bāri Doāb Canals have been described above (p. 67).

On the annexation of the Punjab in March, 1849, a Board of Administration was constituted for its government. The Board was abolished in February, 1853, its powers and functions being vested in a Chief Commissioner, assisted by a Judicial and a Financial Commissioner. After the transfer of the Delhi territory from the North-Western (now the United) Provinces, the Punjab and its dependencies were formed into a Lieutenant-Governorship, Sir John Lawrence, then Chief Commissioner, being appointed Lieutenant-Governor on January 1, 1859. In this office he was succeeded by Sir Robert Montgomery (1859), Sir Donald McLeod (1865), Sir Henry Durand (1870), Sir Henry Davies (1871), Sir Robert Egerton (1877), Sir Charles Aitchison (1882), Sir James Lyall (1887), Sir Dennis Fitzpatrick (1892), Sir Mackworth Young (1897), Sir Charles Rivaz (1902), and Sir Denzil Ibbetson (1907).

Administra-
tion.
Govern-
ment.

In 1866 the Judicial Commissioner was replaced by a Chief Court. A Settlement Commissioner was shortly afterwards appointed to supervise the land revenue settlements, but this office was abolished in 1884, and a Second Financial Commissioner appointed. In 1897, however, the old arrangement was reverted to, a Settlement Commissioner replacing the Second Financial Commissioner.

The direct administrative functions of Government are performed by the Lieutenant-Governor through the medium of a Secretariat, which comprises a chief secretary, a secretary, and two under-secretaries. These are usually members of the Indian Civil Service. The following are the principal heads of departments: the Financial Commissioner, the Inspector-General of Police, the Director of Public Instruction, the Inspector-General of Prisons, the Inspector-General of Civil

are in charge of a Political Agent under the direct control of the Lieutenant-Governor of the Punjab; Chamba is under the Commissioner of Lahore; Kapūrthala, Farīdkot, Māler Kotla, Mandī, and Suket are under the Commissioner of Jullundur; Sirmūr, Kalsia, Dujāna, Pataudi, and Lohāru are under the Commissioner of Delhi; and the 28 Simla States are under the control of the Deputy-Commissioner of Simla, as *ex-officio* Superintendent, Simla Hill States.

Relations
with
Govern-
ment.

The relations of the British Government with Bahāwalpur are regulated by treaty; those with the other States by *sanads* or charters from the Governor-General. The States of Patīāla, Bahāwalpur, Jīnd, Nābha, Kapūrthala, Sirmūr, Farīdkot, and Māler Kotla maintain Imperial Service troops. The other States and also Kapūrthala pay a money tribute, amounting in 1903-4 to a total of Rs. 2,66,434. The States of Patīāla, Jīnd, and Nābha are ruled by members of the Phūlkiān family; and should there be a failure of direct heirs in any of them, the *sanads* provide for the selection of a collateral as successor by the chiefs of the other two States. A *nazarāna* or relief is payable to the British Government by the collateral who succeeds. The Phūlkiān chiefs, and also the Rājā of Farīdkot, are bound by *sanad* to execute justice and to promote the welfare of their people; to prevent *sati*, slavery, and female infanticide; to co-operate with the British Government against an enemy, and to furnish supplies to troops; and to grant, free of expense, land required for railways and imperial lines of road. On the other hand, the British Government has guaranteed them full and unreserved possession of their territories. They, with Bahāwalpur and Kapūrthala, differ from the remaining feudatories in the fact that they possess power to inflict capital punishment upon their subjects. The treaties with Bahāwalpur define the supreme position of the British Government, and bind the Nawāb to act in accordance with its wishes, while in turn the British Government engages to protect the State. *Sanads* of varying import are also possessed by the minor feudatories.

Religion.

Of the chiefs, those of Bahāwalpur, Māler Kotla, Pataudi, Lohāru, and Dujāna are Muhammadans; those of Patīāla, Jīnd, Nābha, Kapūrthala, Farīdkot, and Kalsia are Sikhs; and the rest are Hindus. Of the Muhammadan chiefs, the Nawāb of Bahāwalpur is head of the Daudputra tribe, being a descendant of Bahāwal Khān, who acquired independence during the collapse of the Sadozai dynasty of Afghānistān early in the nineteenth century. The Nawāb of Māler Kotla is a member

of an Afghān family which came from Kābul about the time of the rise of the Mughal empire; his ancestors held offices of importance under the Delhi kings and became independent as the Mughal dynasty sank into decay. The chiefs of Pataudi and Dujāna are descended from Afghān adventurers, and the Nawāb of Lohāru from a Mughal soldier of fortune, upon whom estates were conferred by the British Government as a reward for services rendered to Lord Lake in the beginning of the nineteenth century.

With one exception (Kapūrthala), the Sikh chiefs belong Race. to the Jat race. Chaudhri Phūl, the ancestor of the Phūlkīān houses (Patiāla, Jīnd, and Nābha), died in 1652. His descendants took advantage of the break-up of the Mughal empire in the eighteenth century, and of the confusion which attended the successive Persian, Afghān, and Marāthā invasions of Delhi, to establish themselves, at the head of marauding bands of Sikh horsemen, in the Mughal province of Sirhind, and eventually rose to be independent chiefs. The Rājā of Kapūrthala claims Rājput origin, and his ancestor, Jassa Singh, took rank among the Sikh Sardārs about 1750. The founder of the Farīdkot family, a Barār Jat by tribe, rose to prominence in the service of the emperor Bābar. Jodh Singh founded the Kalsia State about the same time. The remaining chiefs, whose territories lie among the Outer Himālayan hill ranges, are principally of Rājput descent, claiming a very ancient lineage.

The rulers of Patiāla, Farīdkot, Jubbal, Bāghal, Kanethi, Chiefs who Mailog, Kunihār, Bijā, Madhān, Dhādi, Tharoch, and Kuthār are minors. were minors in 1906¹. The chiefs of Māler Kotla and Kumhārsain are of unsound mind, the Rājā of Bashahr is of weak intellect, and the Rājā of Bilāspur was in 1903-4 temporarily deprived of his powers as a ruling chief for misconduct. The State of Patiāla is administered by a council of regency, composed of a president and two members. An English guardian and tutor supervises the education of the Mahārājā. The administration of Farīdkot is conducted by a council, presided over by an Extra Assistant Commissioner deputed by Government, and Māler Kotla is administered by the heir-apparent. In Bijā, Kunihār, Mailog, and Madhān the administration is carried on by councils of State officials, in Dhādi it is in the hands of a relative of the chief, and in Tharoch in those of the *wazir*. Bilāspur, Jubbal, Bashahr, Kumhārsain, and

¹ The Nawāb of Bahāwalpur died at sea in February, 1907, while returning from a pilgrimage to Mecca. He leaves a son two years of age.

Kanethi are administered by native officials of the British service deputed by Government. In Bāghal the council consists of a brother of the late chief and an official deputed by Government, while in Kuthār the manager is a member of the ruling family of Suket.

Legislation
and justice.
Customary
law.

By the Punjab Laws Act of 1872 custom governs all questions regarding succession, betrothal, marriage, divorce, the separate property of women, dower, wills, gifts, partitions, family relations such as adoption and guardianship, and religious usages or institutions, provided that the custom be not contrary to justice, equity, or good conscience. On these subjects the Muhammadan or Hindu law is applied only in the absence of custom.

Legisla-
tion.

A Legislative Council was created for the Punjab in May, 1897, consisting of the Lieutenant-Governor and not more than nine members nominated by him, of whom five were non-officials in 1904. The members do not as yet possess the rights of interpellation and of discussing the Provincial budget, which have been granted to the Councils of the older Provinces. The following are the chief legislative measures specially affecting the Punjab which have been passed since 1880:—

Acts of the Governor-General in (Legislative) Council.

- Punjab University Act, XIX of 1882.
- The District Boards Act, XX of 1883.
- The Punjab Municipal Act, XIII of 1884 and XX of 1890.
- The Punjab Courts Act, XVIII of 1884 (as amended by Acts XIII of 1888, XIX of 1895, and XXV of 1899).
- The Punjab Tenancy and Land Revenue Acts, XVI and XVII of 1889.
- Government Tenants Punjab Act, III of 1893.
- The Punjab Land Alienation Act, XIII of 1900.

Regulations of the Governor-General in (Executive) Council.

- The Frontier Crimes Regulations, IV of 1887, IV of 1889, and III of 1901.
- The Frontier Murderous Outrages Regulation, IV of 1901.

Acts of the Punjab Legislative Council.

- The Punjab General Clauses Act, I of 1898.
- The Punjab Riverain Boundaries Act, I of 1899.
- The Punjab Land Preservation (*Chāq*) Act, II of 1900.
- The Punjab Descent of *jitirs* Act, IV of 1900.
- The Sind-Sāgar Doāb Colonization Act, I of 1902.
- The Punjab Steam Boilers and Prime Movers Act, II of 1902.
- The Punjab Military Transport Animals Act, I of 1903.
- The Punjab Court of Wards Act, II of 1903.
- The Punjab Pre-emption Act, II of 1905.
- The Punjab Minor Canals Act, III of 1905.

The supreme civil and criminal court is the Chief Court, ^{Supreme Court.} which consists of five Judges, of whom one at least must, under section 4 of the Punjab Courts Act, XVIII of 1884, be a barrister of not less than five years' standing. The Court has from time to time been strengthened by the appointment of temporary Additional Judges, who numbered four in 1906. Of the five permanent judges, three are members of the Indian Civil Service, one is an English barrister, and one an Indian pleader.

Subordinate to the Chief Court are the Divisional and ^{Subordinate Sessions Judges.} Sessions Judges, each exercising civil and criminal jurisdiction in a Civil and Sessions division comprising one or more Districts. As Divisional Judges, these officers try most of the appeals in civil suits from the courts of first instance. As Sessions Judges, they try sessions cases, with the aid of assessors, and hear criminal appeals. Thus the Divisional and Sessions Judges in the Punjab fulfil the functions of District and Sessions Judges in the Regulation Provinces. Appeals in minor civil suits from the Munsifs' courts are heard by the District Judge, whose court is also the principal court of original jurisdiction in the District. The Divisional and Sessions Courts are established under Act XVIII of 1884, which also provides for the appointment of Subordinate Judges (exercising unlimited civil jurisdiction) and Munsifs. The latter are of three grades, the jurisdiction of a first-grade Munsif being limited to suits not exceeding Rs. 1,000 in value. There are Small Cause Courts at Lahore, Amritsar, Delhi, and Simla, and many Munsifs are invested with the powers of such courts under Act IX of 1887.

Relatively to the population, the Punjab is the most litigious ^{Civil cases.} Province in India. In 1901 the number of suits instituted was 11.4 per 1,000 of the population, the next highest figure being 9.6 in Bombay. During the last few years, however, the annual number of suits has declined considerably, from 227,284 in 1900 to 156,354 in 1905. In the year 1904-5 alone there was a decline of no less than 26 per cent., due mainly to an amendment in the law which extended the period of limitation in suits for the recovery of money lent from three to six years. The Punjab Alienation of Land Act of 1900 has also had a considerable effect in checking litigation between money-lenders and agriculturists. Suits of this class show a falling-off of nearly 42 per cent. in the five years (1901-5) during which the Act has been in force. The question of codifying the customary law has of late years

attracted some attention. An attempt has been made to codify the custom as to pre-emption in the Pre-emption Act II of 1905, but it is not possible to say at present what the ultimate effect of that Act will be. During its first year it stimulated litigation to some extent.

Criminal
courts.

The District Magistrate is ordinarily (and additional District and subdivisional magistrates and other full-powered magistrates are occasionally) invested with power to try all offences not punishable with death, and to inflict sentences up to seven years' imprisonment. Further, in the frontier District of Dera Ghāzi Khān and in Mianwālī an offender may be tried by a council of elders under the Frontier Crimes Regulation, and in accordance with its finding the Deputy-Commissioner may pass any sentence of imprisonment not exceeding fourteen years; but sentences exceeding seven years require the confirmation of the Commissioner, who has also a revisional jurisdiction in all cases.

Criminal
cases.

The litigious spirit of the people is illustrated by their readiness to drag their petty disputes into the criminal courts. About one-third of the charges preferred are ultimately found to be false. In a normal year the number of true cases is about 5 per 1,000 of the population, but this figure naturally fluctuates from year to year. A season of agricultural depression will cause an increase in crime against property and a decline in the number of petty assault cases, the prosecution of which is a luxury reserved for times of prosperity. The commonest form of crime is cattle-lifting, which is rife in the South-Western Punjab and in those Districts of the Eastern Punjab which border on the United Provinces and Rājputāna. Crimes of violence, generally arising out of quarrels connected with women or land, are commonest among the Jat Sikhs of the Central Punjab and the Musalmān cultivators of the northern Districts. Offences relating to marriage have increased during the last five years, probably owing to the ravages of plague, which has caused a proportionately higher mortality among females than among males, and has thus enhanced the value of the surviving women. The same cause has led to an increase in civil suits relating to women. In an average year about 250,000 persons are brought to trial, about 27 per cent. being convicted.

Criminal
appeals.

All sentences imposed by magistrates of the second and third classes are appealable to the District Magistrate; and in 1904, out of 28,564 persons sentenced by them, 34 per cent. appealed and 36 per cent. of these 'appeals were successful.

settlements. This arrangement consists in the assignment for Provincial uses of the entire income under certain heads of revenue and a fixed proportion of income under others, termed 'shared heads.'

Under the first Provincial settlement the total receipts rose ^{1877-82.} from 284.44 lakhs (Provincial share 51.39) to 335.01 lakhs in 1882 (Provincial share 80.25), owing to the rapid growth of stamps and excise revenue. In the same period expenditure rose from 179.14 to 216.06 lakhs (the Provincial share rising from 116.57 to 133.85 lakhs), owing to the development of the departments transferred to Provincial control. The Provincial income and expenditure during the quinquennium averaged 65.13 and 129.31 lakhs respectively, compared with 49.22 and 120.11 lakhs estimated in the contract. The Provincial ^{1882-7.} balance was 29.63 lakhs in 1882. Under the second settlement Provincial received 40.7193 per cent. of the land revenue, and was made liable for the same proportion of the cost of settlement and survey operations, and refunds of land revenue. Half the receipts and expenditure under forests became Provincial, and the same division was made of stamps, excise, and registration, formerly wholly Provincial, while half the licence tax collections also became Provincial. On the other hand, the pay of Civil Surgeons and other charges devolved on Provincial. Under this settlement the receipts rose from 344.37 to 351.54 lakhs (Provincial from 140.35 to 150.68 lakhs), while expenditure fell from 237.03 to 218.12 lakhs, but the Provincial share of this rose from 146.36 to 155.77 lakhs. The Provincial income and expenditure averaged 146.84 and 152.98 lakhs respectively, as compared with the estimates of 144.90 and 144.94 lakhs, leaving the balance at 17.36 lakhs, or 7.36 more than the minimum reserve prescribed in 1887. The settlement ^{1887-92.} was renewed on the same terms for the third quinquennium, during which the income rose from 361.03 to 414.50 lakhs (Provincial from 151.93 to 168.30 lakhs), and the expenditure from 224.53 to 245.19 lakhs (Provincial from 153.04 to 175.17 lakhs). The Provincial income and expenditure averaged 160.66 and 162.05 lakhs respectively, compared with the estimates of 144.90 and 144.94 lakhs, while the Provincial balance rose to 27.71 lakhs. The cost of certain measures, of which the most important was the reorganization of the Punjab Commission at a cost of 2.27 lakhs a year, was met by assignments from Imperial.

Under the fourth settlement the Provincial shares were fixed ^{1892-7.} as follows: land revenue 25, stamps 75, and excise 25 per

cent. Half the income tax, hitherto wholly Imperial, also became Provincial. The income rose from 421.92 to 473.10 lakhs (Provincial from 134.91 to 142.27 lakhs), chiefly under land revenue (9.43 lakhs), stamps (2.88), excise (1.86), income tax (0.80), registration (0.95), and irrigation (2.20), to take the annual averages. Expenditure increased from 248.22 to 284.20 lakhs (Provincial from 180.39 to 185.34 lakhs), owing to larger outlay on public works, maintenance of canals, salaries and expenditure of civil and political departments, and famine relief. Survey and settlement charges, hitherto shared, became Provincial, raising the total of expenditure. The Provincial income and expenditure averaged 139.49 and 179.41 lakhs respectively, as compared with the contract figures of 132.19 and 167.24 lakhs; but the settlement affected the finances of the Province adversely, and the quinquennium closed with a balance of 5.23 lakhs, or hardly more than half the prescribed minimum.

1897-1905. The fifth settlement made in 1897 was afterwards extended to 1904-5. It was modified in details in consequence of the separation of the North-West Frontier Province in 1901, but the general terms remained unaltered. Famine (which commenced in November, 1896) and plague (which broke out early in 1897) led to diminished receipts and larger outlay, resulting in a complete collapse of the Provincial finances, which had to be supported by special grants from Imperial funds. Famine cost 54.70 and plague 6.58 lakhs during the quinquennium 1897-1901. Miānwāli District was created, and the Chenāb and Jhelum Colonies extended. In 1902-3 arrears of land revenue, aggregating 39.30 lakhs, were remitted, and loans to agriculturists, amounting to 9.06 lakhs, were written off in that and the following year. In 1902-3 the Imperial Government contributed 3.80 lakhs for extensive measures against plague, over and above the ordinary plague expenditure from Provincial funds. In that year the income was 519.36 lakhs, and the expenditure 299.65 lakhs (Provincial 219.23 and 208.94 lakhs respectively). Financially, the conditions in the Punjab since 1897 have been so abnormal that analysis of the figures for 1897-1903 would serve no useful purpose.

From April 1, 1905, the new Provincial settlement came into effect. Its noticeable features are:—

(1) Permanency—leaving the Province to enjoy the fruits of its economy, unless grave problems of Imperial interest call for assistance from Local Governments; (2) in the case of 'shared heads' the expenditure is divided between Imperial

and Provincial in the same proportion as in the case of corresponding heads of income, except land revenue, the expenditure (31.04 lakhs) under which is entirely Provincial, while the Provincial share of the income is three-eighths (95.58 lakhs); (3) the Local Government obtains, for the first time, a direct financial interest in 'major' irrigation works, three-eighths of the income (62.89 lakhs) and expenditure (37.74 lakhs), which includes interest on capital outlay 15.62 lakhs, having been assigned subject to a guarantee of a net income of 28 lakhs per annum.

Since the settlement was sanctioned the famine cess (Provincial rates) has been abolished, and a compensatory assignment of 6½ lakhs per annum given to Provincial. Recoveries from District funds on account of District Post charges were waived and the Patwāri cess abolished from April 1, 1906, and the cantonment police provincialized from April 1, 1905, lump assignments aggregating 17.83 lakhs being given as compensation. Famine expenditure did not enter into the Provincial settlement, and the question of its distribution is now under consideration.

Prior to annexation, the character of the land tenures in the Punjab was very indefinite and varied considerably from place to place. Usually, however, cultivation was carried on by a number of independent groups of men scattered at uncertain intervals throughout the cultivable area of the country. Each group was, or believed itself to be, of a common stock, and the area it cultivated was known as a village or *mausa*, while the cultivators lived together on a common village site. When the crops were cut, a part of the produce was handed over to the village menials in payment for their services, and the rest was divided between the state and the cultivator. In many cases the state share was taken by some magnate or court official to whom it had been assigned; and there would often be some man of local influence who, from his character or traditional claims, was in a position to attend at the division of the grain heap and demand a small share for himself. When an assignee or intermediary claimant was strong enough, he would break up the waste, settle cultivators, and otherwise interfere in the village arrangements; but he seldom, if ever, ousted the cultivator so long as the latter tilled his land and paid his dues. The land itself was very rarely transferred, and when a transfer did take place it was almost always to some relation or member of the village community.

Land
revenue.
Under
native
rule.

On annexation the three duties which fell on the land Subse-

quent development. revenue officials were the determination and record of rights in the land, the assessment of the land, and the collection of the revenue; and the same duties continue to constitute the main features of the land revenue administration at the present day.

The cadastral record. A great deal of time and anxiety were expended in the early days of British rule over the determination of the various parties who had rights to the soil, and more particularly over the question of ownership, the persons recorded as owners being as a rule made responsible for the revenue. In many cases, more especially in the south and west of the Province, intermediaries of the kind above noticed were admitted to have superior claims to the proprietary right; but in most instances the cultivators were held to be the owners of the village lands, either jointly or in severalty.

Zamīndārs. In the Punjab, as in the United Provinces, the ordinary landholder is known as *zamīndār*, the term being applied irrespective of the size of the holding. A distinction used to be made in revenue records between *samīndāri* and *patidāri* tenures on the one hand, and *bhaiyāchārā* tenures on the other—the former referring to estates held as a single unit or portions representing fractions of a single original share, and the latter to estates held in separate portions representing no fractional parts of the whole. The former classes of tenure are, however, less common than formerly, and the distinction is now of little practical importance. The *zamīndārs* in an estate are technically bound by a common responsibility towards Government, each being responsible for any balance of revenue due from other *zamīndārs* in the village; but here too the tendency is towards individualism, and with lighter and more elastic assessments the enforcement of collective responsibility has become practically obsolete. In practice, the owner or owners of each holding are assessed separately to revenue and are responsible to Government for the revenue so assessed. The revenue in each village is collected from the owners by one or more headmen or *lambardārs*, who pay the proceeds into the Government treasury and receive a percentage on the collections as their remuneration.

The persons recorded as owners, while undertaking the responsibility for the Government revenue, obtained a very much fuller right of property over their lands than had been usual in Sikh times. The right of transfer remained at first under some control and was little used; but as the revenue became lighter and land more valuable, the owners gradu-

ally began to alienate, and within thirty years of annexation land had already begun to pass freely into the hands of money-lenders. This evil grew more and more marked, until in 1901 the Government was compelled to place considerable restrictions on the powers of alienation enjoyed by agricultural tribes, in order to prevent their being completely ousted from their lands.

The initial examination of rights in land which occupied the first twenty years or so after annexation was a part of the process known as the regular settlement of the various Districts, and was accompanied by measurement of the land and the preparation of a complete cadastral map and record of titles. The arrangement originally contemplated was to undertake a revision of the record of each District only when the District came under reassessment, that is to say, at intervals of twenty or thirty years. But since 1885, when the whole record system was reformed, it has been the practice to enter all changes as they occur in a supplementary register and to rewrite the record of titles once every four years; and this record is in law presumed to be true until the contrary is proved. In the same way, instead of making a fresh cadastral measurement of the District at each settlement, it is now becoming more usual to note changes in field boundaries as they occur, and to provide a fresh map at resettlement from the data thus available instead of by complete remeasurement.

The cadastral record, though it also shows all rights to land, was primarily meant to be a fiscal record indicating the persons liable to pay the land revenue. Having determined the persons thus liable, the next point is to decide the manner in which the assessment should be taken. The Sikh government most frequently took its revenue (as above described) in the form of a share of the crop, an arrangement which proportioned the assessment very satisfactorily to the quality of the harvest, but was attended by much friction and dishonesty. To avoid these disadvantages, and to maintain the tradition imported from the North-Western (now United) Provinces, the British revenue was levied in the form of a fixed cash assessment, payable from year to year independently of the character of the harvests. This form of revenue was, in most parts of the country, a considerable relief to the people after the harassment of the Sikh system, and it has ever since remained the predominant form of assessment in the Province. It subsequently, however, became clear that, in dealing with a people who save little from one year to another, an assessment of a fixed character

The assess-
ment.

caused a good deal of hardship where the harvests varied greatly in character; and it has therefore become gradually more usual, especially on river-side areas and in rainless tracts of the Western Punjab, to assess the land by a cash acreage rate on the crops of each harvest, so that the revenue may fluctuate with the area actually cropped.

Share of
produce
taken.

The prevalent form of assessment prior to annexation absorbed the whole, or nearly the whole, of the produce which was not required for the maintenance of the cultivator. The first rough assessments under British rule aimed at obtaining the money value of a share of the gross produce approximating to that obtained by the Sikh revenue proper, after excluding its superfluous cesses; and as more detailed information became available, it became usual to look upon one-sixth of the gross produce as a fair standard of assessment. Later on, however, when land became more valuable and letting to tenants more common, it became, and has now for many years continued to be, the rule to assess on the net rather than on the gross 'assets,' and to assume, as in the United Provinces, that the normal competition rents paid on rented lands are a fair index to the net 'assets' of the proprietors generally. In the rare cases where competition rents are ordinarily paid in cash, there is little further difficulty; but in the more usual case of kind-rents the value of the net 'assets' can be arrived at only after a number of elaborate and somewhat uncertain calculations as to prices, yields, &c. Although therefore the standard of assessment is represented, as in the United Provinces, by one-half the net 'assets,' this standard has not, as in those Provinces, been looked on as determining the average assessment, but as fixing a maximum which should not be exceeded. In four settlements recently sanctioned, for instance, the proportion of the calculated half net 'assets' taken in each District has been 78, 81, 69, and 87 per cent. respectively. These figures do not include the cesses, which are calculated on the land revenue but are separate from it. The rate at which these cesses are levied varies in the different Districts; but the prevailing rate is one of about $13\frac{1}{2}$ per cent., or about $2\frac{1}{2}$ annas per rupee, on the land revenue, of which 5 per cent. goes to the village headman, and $8\frac{1}{2}$ per cent. to Local funds. Efforts are at the same time made to assist local agriculture, not only by the loan of money for the purchase of seed and bullocks and the construction of wells, but also by remitting temporarily the revenue assessable on improvements such as the construction of gardens and wells. The increased

Cesses.

Allow-
ances.

assessment due to the improvement caused by a new well is remitted for a period of twenty years from the date of the construction of the well.

The assessment or settlement of the Province has usually been taken up District by District. The settlements effected immediately after annexation were summary in character, and the revenue then assessed remained payable for four or five years only. The more elaborate settlements subsequently made, which were known as regular settlements, were usually for thirty or twenty-six years; and the prevalent term now in force is one of twenty years. Term of settlement.

In a tract where the previous assessment has approximated to the standard of half the net 'assets,' the main grounds for enhancement after twenty or thirty years are the increase of cultivation and the rise in prices. The cultivation of the Province between 1880 and 1900 increased about 19 per cent., and the price of the main staple (wheat) rose in the same period by about 36 per cent., while the land revenue demand of the Province, standing in 1880 at 193 lakhs, was 203 lakhs in 1890, 250 lakhs in 1900, and 283 lakhs in 1904, which at present prices represents an assessment of 460,000 tons of wheat. Adding cesses (60 lakhs) and canal rates (168 lakhs), the total assessment comes to 511 lakhs, representing 813,000 tons of wheat. The assessment in the time of Akbar (1594), when cultivation was quite undeveloped, reached a sum of 282 lakhs, which at the prices then current represented in wheat no less than 1,700,000 tons.

The collection of the grain assessments imposed by the Sikhs taxed, as may be imagined, the energies of a large staff of officials. Since annexation it has been usual to entrust the collection of cash assessments to the village headman, who, in return for this and other services, receives 5 per cent. of the revenue which he collects. The collection of the revenue. In the early days of British rule, when the assessments were based on imperfect data and were often very severe, the headman frequently failed to collect the revenue; and stringent measures had to be undertaken to recover the Government dues, involving in many instances the wholesale transfer of proprietary rights from the agricultural to the moneyed classes. Even at the present day the collection of dues from a body so numerous as the peasant revenue-payers of the Province is a task which cannot always be accomplished without friction; and the law has reserved for Government very complete powers, by way of attachment, arrest, and sale, for the realization of its demands. The

enforced sale of a defaulter's property, which in early days was common, is now, however, almost unknown.

Suspensions and remissions.

In collecting the fixed assessments it is now the rule, on the occurrence of any markedly bad seasons, to arrange for total or partial suspensions of the revenue, calculated on the basis of the cropped area of the harvest as recorded by the revenue staff. The suspended revenue is allowed to lie over till next harvest, and is then collected or further suspended according to the conditions then prevailing. Should it be found necessary to postpone the collection for a considerable time, it is ultimately remitted altogether. When crops suffer from causes not of the ordinary seasonal nature for which allowance is made at assessment, e.g. by locusts or hail, the area damaged is calculated, and the revenue thereon is remitted at once. This system of suspending and remitting revenue has since 1880 become much more developed than it was in the earlier days of British rule, and during the famines of 1896 and 1900 it did much to foster the resources of the affected areas. In Hissār, which suffered most at that time, 5.9 lakhs, representing 83 per cent. of the land revenue of the District, was suspended in 1899-1900; and in 1901-2 a sum of 37.3 lakhs then under suspension in various Districts was entirely remitted.

New restrictions on alienation of land.

Mention has been made of the fact that, owing to the serious extent to which land was passing from the hands of the old agricultural tribes to those of the moneyed classes, the Government was in 1901 compelled to place restrictions on the alienation of land in the Punjab, this being the first occasion on which a general measure of this character has been introduced in India. Under the Land Alienation Act (XIII of 1900), the Government has in each District notified certain tribes as 'agricultural tribes,' and has classed as 'agriculturists' for the purposes of the Act all persons holding land, who either in their own names or in the names of their ancestors in the male line were recorded as owners or as hereditary or occupancy tenants at the first regular settlement. A member of an agricultural tribe may not, without permission, sell or otherwise permanently alienate his land to any one who is not a statutory 'agriculturist' of the same village or a member of the same agricultural tribe or group of tribes (for the present all the agricultural tribes of a District are counted as being in one group). Similarly, a member of an agricultural tribe may not mortgage land to any one who is not a member of the same tribe or group of tribes, unless the mortgage is in

the administration of the salt revenue in the Punjab was at the same time made over to the Imperial department. In 1878 the customs line was abolished, but the preventive line at the Indus was still retained. Upon the abolition of the customs line the Punjab system of levying duty at the mines was extended to the Rājputāna salt sources, but the change of policy had no material effect upon the salt supply of the Punjab. Cis-Indus rock-salt continued to be the main source of supply for the trans-Sutlej Districts, and with the extension of the railway to Khewra in 1882 the demand for this salt rapidly grew.

By the annexation to the Punjab of the Delhi territory after the Mutiny two additional sources—the Nūh and Sultānpur salt-works in Gurgaon and Rohtak Districts—were brought within the Province. The greater part, however, of the salt produced at these works was consumed in the United Provinces of Agra and Oudh; and the competition of superior salt at a uniform rate of duty after the abolition of the customs line and the lease of the Rājputāna salt sources by the British Government soon proved fatal to these works. The quantities of Nūh and Sultānpur salt which annually crossed the customs line into British territory before 1878 were about 158,000 maunds and 680,000 maunds respectively. By 1883-4 the salt from the Nūh works, which were not on the line of railway, had become unsaleable, and the works were closed. The Sultānpur salt-works, most of which are on the Farrukhnagar branch of the Rājputāna-Mālwa Railway, are still struggling for existence, but the annual sales from the works in the three years ending 1903-4 have averaged only 65,763 maunds.

For some years after annexation earth-salt was made on a considerable scale under a contract system of taxation in the Rājanpur *tahsil* of Dera Ghāzi Khān District; but in 1881 the prohibition of the manufacture of alimentary earth-salt was extended to the territory west of the Indus, and all licit salt-works were closed.

The preventive line on the Indus was withdrawn in 1896, when the duty on Kohāt salt was raised to Rs. 2 a maund of 102½ lb. The transport of this salt to cis-Indus territory, both in the Punjab and in the recently constituted Frontier Province, is, however, still prohibited.

At present Rājputāna salt is consumed in Delhi and the adjoining Districts, and from Ambāla northwards the Province is supplied with rock-salt from the cis-Indus and Kalābagh mines. The salt excavated from the cis-Indus mines is the

cheapest in India, and of excellent quality, the analysis of a sample showing a percentage of 98.86 of chloride of sodium, and the average percentage may be taken at 97. The trade in salt within the Province is in a satisfactory state. In 1903-4 the number of traders dealing direct with the Salt department was 2,035, and salt is supplied to all parts of the Province without the intervention of middlemen. Salt from the Mayo Mines at Khewra is delivered, sewn up into bags (which are provided by the traders) and loaded into railway wagons, at a price of 1 anna 3 pies a maund. Salt from Wārchā and Kālābāgh, where arrangements for its removal are made by the traders, is sold at 9 pies a maund. The illicit manufacture of salt is still carried on in Rajanpur, and cases occasionally occur in Multān, Muzaffargarh, Delhi, and Gurgaon; but salt is good and cheap, especially in the central and western portions of the Province, and offences against the Salt Law are rare.

Details of the quantities of salt sold for consumption within the Province are given below :—

Period.	Salt made and sold.		Salt imported.		Gross revenue, including licences for the manufacture of saline substances, but excluding miscellaneous receipts.	Consumption in the Province.
	On behalf of Government.	On behalf of Mandi State and by private persons.	From within India.	From other countries.		
	Mds.	Mds.	Mds.	Mds.	Mds.	Mds.
1880-1 to 1889-90 (average) .	1,715,205	611,170	394,619	1,537	50,80,241	2,047,473
1890-1 to 1899-1900 (average) .	2,086,198	243,899	314,154	1,559	57,03,369	2,188,088
1900-1 .	2,405,520	175,817	403,337	2,386	63,97,285	2,459,223
1903-4 .	2,662,780	199,967	365,470	2,384	57,08,188	2,542,282

The incidence of consumption per head was $6\frac{3}{4}$ lb. in 1881, $7\frac{1}{8}$ lb. in 1891, $7\frac{1}{4}$ lb. in 1901, and $7\frac{1}{2}$ lb. in 1904.

The Punjab system of excising opium differs essentially from that of the rest of India, in that the cultivator is allowed to sell the produce of his poppy crop to licensed vendors instead of being compelled to sell it to the state as in other Provinces. Hence the state, not being a monopolist of the drug, has to resort to its taxation, and ever since annexation it has levied a twofold tax upon it: firstly, it levies an acreage

Excise.
Opium.

duty on the poppy crop; and secondly, it taxes its sale by putting up to auction the licences to purchase the produce and resell it when made into opium. Under this system of direct taxation opium is but lightly taxed in the Punjab. The acreage duty is low (only Rs. 2 per acre in the tracts in which opium is made, and Rs. 4 in those in which the poppy is cultivated chiefly for the poppy-heads), in order to safeguard the cultivator against failure of the crop or inability to realize it; and this involves a low rate of import duty, as a high rate would encourage smuggling. On the other hand, the import duty has to be pitched high enough to prevent the home-produce being undersold.

In the Punjab opium is made only in the following tracts: Cultiva-
 Shāhpur and Ambāla Districts, the Thānesar *tahsil* and Pehowa
 circle (in Karnāl), the Chuniān *tahsil* of Lahore, the Rājanpur
tahsil of Dera Ghāzi Khān, in the plains; and in the hills, the
 Kot Khai *tahsil* of Simla, and the Kulū subdivision of Kāngra.
 The plant is also cultivated chiefly for poppy-heads in four
 tracts: Jullundur and Amritsar Districts, the Hoshiārpur *tahsil*
 of Hoshiārpur, the Lahore and Kasūr *tahsils* of Lahore, and
 the Jāmpur *tahsil* of Dera Ghāzi Khān. Throughout the
 rest of British territory in the Province the cultivation of
 the poppy has now been absolutely prohibited, but it is
 cultivated in several Native States, especially in those of the
 Himālayan region. The total area cultivated in British terri-
 tory averaged 10,000 acres between 1891 and 1900, while
 it was 4,700 acres in 1900-1, and 8,852 acres in 1903-4. The
 area varies greatly from year to year. In Shāhpur, Simla,
 and Kulū it is fairly constant; but elsewhere it depends on
 the price of wheat, a large area being sown only if wheat is
 cheap. The area cultivated for poppy-heads varies much more
 than that sown for opium, and their price in consequence
 also fluctuates greatly.

Opium is imported into British territory from the Native Imports and
 States of the Province, especially the Simla Hill States, Sirmūr, exports.
 Mandī, and the Himālayan area of Patīālā; but import from
 Bahāwalpur and certain plains tracts of the other Native States
 is prohibited. It is also imported from Mālṡā, Bengal, Kashmir,
 and Afghānistān. The Government of India allows a maximum
 of 1,116½ maunds of Mālṡā opium to be imported at a duty
 of Rs. 280 per chest, compared with the usual duty of Rs. 725.
 Of this amount about 330 maunds are delivered annually to
 the Phūlkiān States, and the duty on this is credited to the
 States in order to interest them in the prevention of smuggling.

quantity sold to the Indian public is about 25,000 gallons annually, and is increasing. In the cities cheap European spirits compete with native spirits.

Although the hemp-plant grows abundantly, *charas*, the drug Drugs. extracted from its leaves and flowers, cannot be made in the Province. It is imported from Yärkand and Kāshgar, via Leh, to bonded warehouses in the Punjab or United Provinces. Before it is sold, a duty of Rs. 6 per seer is levied. *Charas*-smoking is considered disreputable, and is a dangerous practice, often leading to insanity. *Bhang*, the dried leaves of the hemp-plant, supplies a medicinal beverage with cooling properties, which is drunk chiefly by Sikh ascetics. The plant grows wild in such quantities in the hills and submontane Districts that it is impossible to prohibit the gathering of its leaf, but any person found in possession of more than one seer is liable to a penalty. Licensed vendors may collect *bhang* without restriction within their own Districts, but in Districts where hemp does not grow all *bhang* imported is subject to a duty of Rs. 4 per maund. Thus while the duty on *charas* is easily realized by guarding the routes of import, that on *bhang* is very difficult to collect, and where it grows wild cannot be imposed at all.

Details of net excise revenue, &c., are shown below. The Statistics of revenue. figures up to and including the year 1900-1 are for the Punjab as constituted before the separation of the North-West Frontier Province; those for 1903-4 are for the Province as now constituted:—

	Net revenue in rupees.		
	1890-1 to 1899-1900 (average).	1900-1.	1903-4.
Imported spirits (by licence fees) .	69,370	91,982	99,006
Indian spirits (including native fermented liquors made in Kāngra District) made in British India, by still-head duty and licence fees	13,63,906	14,76,443	16,34,463
Beer made in British India (by duty per gallon)	32,109	1,01,114	1,23,594
<i>Charas</i> and <i>bhang</i> (by licence fees)	17,869	1,94,114	1,72,612
<i>Charas</i> and <i>bhang</i> (by quantitative duty and warehouse dues) . .	38,875	1,27,426	1,83,990
Opium, licence fees, and miscellaneous receipts	5,29,188	6,10,007	5,85,577

The incidence of the gross excise revenue, excluding opium, was 1 anna 1 pie per head in 1881, 1 anna 5 pies in 1891, and 1 anna 9 pies in 1904.

Stamped paper of a primitive kind came into use in the Stamps.

Punjab immediately after annexation. In 1872 the present system was inaugurated by the appointment of a Superintendent of Stamps, an office which is now combined with that of Commissioner of Excise. Every Government treasury is a local dépôt for the sale of stamps, judicial and non-judicial, to the public, and of postage stamps to postmasters. Similarly, sub-treasuries are branch dépôts. All treasurers are *ex-officio* vendors of stamped paper to the public. They are entrusted with stocks of stamps, and are required to meet the detailed demands for stamps made by the public, indenting upon the main stock of the local dépôt when their own runs low. The net revenue from the sale of judicial stamps in the Punjab between 1881 and 1890 averaged 23 lakhs and in the following decade 27 lakhs, while non-judicial stamps in the same periods brought in on an average 11 and 14 lakhs respectively. In the year 1900-1 judicial stamps realized 27 lakhs and non-judicial stamps 15 lakhs, and in 1903-4 (after the separation of the North-West Frontier Province) the net revenue was 27 and 13 lakhs respectively.

Income
tax.

The net revenue from income tax rose from an average of 10.1 lakhs between 1886 and 1890 to 11.2 lakhs in the following decade, and amounted to 11.6 lakhs in 1903-4, after the separation of the North-West Frontier Province and the exemption of incomes below Rs. 1,000. The corresponding number of assesseees was 40,251, 44,785, and 21,709. The incidence of the tax per head (of the assesseees) in 1903-4 was Rs. 53-6-8, and there were 1.1 assesseees per 1,000 of the population.

Local and
municipal.
The vil-
lage com-
munity.

Local government in the Punjab, as in the rest of India, is of two kinds, the local government of the village and that of the District and town; the former is an indigenous institution dating from the remotest antiquity, the latter an exotic of Western importation. The Indian village community is described in Vol. IV, chap. ix. All the three types of village community there described are in one form or another represented in the Punjab. The Jat village of the south and central plains is a perfect type of the joint village, while the villages of the Salt Range, owned by landlords of a dominant race, who have gathered round them dependent communities of cultivators, represent the landlord village. The *ryotwari* type of village may be said to exist in the south-western plains, where the so-called village is merely a group of isolated homesteads, built wherever a well has been sunk in the arid desert. Here the village is really a fiscal unit; and much the same

may be said of the villages of the hills, which are in reality only groups of hamlets, loosely held together by certain common interests and joint rights of grazing or pasture in the forests. In these latter cases village self-government has naturally never existed, but the true village community has from time immemorial administered its own affairs with little outside help or interference. The landowners of the village, connected by common descent, real or fictitious, form among themselves a democracy, which rules its dependent priests, artisans, and menials with oligarchic authority. The informal assembly of the village, comprising every adult male of the proprietary body, is presided over by a headman, *chaudhri*, *mukhia* (lit. 'spokesman'), or, to use the modern term, *lambardār*. Often there are several headmen. The headman of a village is appointed by the Deputy-Commissioner, and, if he is recognized by the community as its natural leader, his influence equals his authority. If not, his authority is limited to such legal powers as are conferred on him, and in the South-East Punjab a leader of the opposition is regularly chosen. The headman transacts the business of the community, including the management of its common fund, to which all contribute, and to supplement which, in many villages, a hearth or door tax is imposed on all residents who are not members of the proprietary body. The communal body has no legal powers; but it is in its power to inflict on recalcitrant members of the community the punishment of social excommunication, and on the menials and artisans various inconveniences. Only the village banker is beyond its authority; and he, by virtue of being the creditor of every man in the village, is able to bring considerable pressure on the council to order things according to his pleasure. There is, however, but little prospect of the village council being utilized as a part of the machinery of Government. As being essentially a tribal organization, it can never be entrusted with legal powers in a community that is daily approaching the industrial stage, and the spread of education makes it increasingly difficult for it to exercise its unauthorized powers of control.

In some form or other municipal administration has existed in the Punjab ever since annexation. In its earliest stage committees of townsmen were formed to administer the surplus of the funds raised by cesses or duties for watch and ward purposes. This system worked well, but it lacked the essentials of municipal government, the funds being vested in official trustees. A more regular form of municipal adminis-

Municipal
adminis-
tration.

The principal source of municipal income is octroi, which in 1903-4 realized as much as 30 lakhs out of the total of Rs. 55,48,000. Direct taxation of houses and lands is virtually confined to the hill municipalities and Delhi. Water rate is levied only in Ambāla, Simla, Kasumpti, Dharmśāla, Lahore, Dalhousie, and Murree, in all of which water-supply schemes have been carried out. The main features of municipal finance are shown in a table at the end of this article (p. 161).

Local self-government of the District likewise dates from the early days of British rule. Prior to 1871 each District had a District committee, but it was merely an advisory body. The rules under the Local Rates Act of that year made these committees administrative bodies, and they did excellent work. In 1883 Lord Ripon's Act extended the elective principle to District boards, and under it local boards were also established in *taksils*. The system of election at first promised well; but it was soon found that membership of a board was not sought for public ends, and men of good position and local influence were reluctant to stand. It is now an accepted fact that the best men prefer nomination by Government to canvassing for election. Local boards were soon found to be superfluous, as the business of the District boards could not with advantage be delegated, and they are rapidly being abolished. In 1903-4 the Province possessed 26 District boards, excluding Simla, where the Deputy-Commissioner exercises the powers of a District board. These boards were composed of 1,077 members: 207 *ex officio* (the Deputy-Commissioner being nearly always *ex-officio* president), 495 nominated and 375 elected. Only 7 Districts had local boards, 28 in number, with 531 members: 28 *ex officio*, 161 nominated, and 342 elected.

The District fund is mainly derived from the local rate—a cess ordinarily of 1 anna 8 pies per rupee, or Rs. 10-6-8 per cent.¹, on the land revenue of the District, supplemented by grants from Provincial funds. The expenditure of a District board is chiefly devoted to the maintenance of schools and dispensaries, vaccination, roads and resthouses, arboriculture, ferries, cattle-pounds, horse-breeding, and horse and cattle fairs. Its expenditure on education, medical relief, and office establishments is largely of the nature of fixed establishment charges. Famine works have been readily undertaken by District boards in time of necessity; and large expenditure under this head, coinciding as it always must with little or

¹ Now reduced to Rs. 8-5-4 per cent. by the abolition of the cess for famine (1906).

no income from the local rate, has frequently necessitated financial aid from Government. District boards have afforded invaluable assistance to Deputy-Commissioners as consultative bodies, but the necessity of conforming to the rules of the educational, medical, and other departments leaves little scope for local initiative. Even in the case of public works, six-sevenths of the sum available is ear-marked for maintenance and establishment. The income and expenditure for a series of years are shown in a table at the end of this article (p. 162).

Public
works.
Irrigation.

The Public Works department is divided into two branches: Irrigation, and Buildings and Roads. The former has hitherto been an Imperial branch under a Chief Engineer, who is also *ex-officio* secretary to the Provincial Government. According to the Provincial settlement which came into force in 1905, the Provincial Government participates in the profits earned by the branch, and bears a share of the working expenses. Under the Chief Engineer are Superintending Engineers, who control circles formed of one or more canals. These circles are again divided into divisions, each in charge of an Executive Engineer. The size of a division varies according to circumstances; but, excluding head-works divisions, it usually comprises an irrigated area of about 350,000 acres. The Province is divided into 6 circles and 26 divisions. Each division is further divided into 3 or 4 subdivisions in charge of a subdivisional officer, usually an Assistant Engineer. Not only does the department maintain all the canals in its charge, but its officers are responsible for the registration and measurement of the irrigation and the assessment of the revenue levied on it. For canal revenue purposes each subdivision is divided into sections, generally three in number, each in charge of a *siladār*, and each section is again subdivided into *patwāris'* circles. For maintenance purposes, a subdivision is divided into sections, in charge of overseers or sub-overseers. The revenue establishment of a whole division is further supervised by a Deputy-Collector, who is also a second-class magistrate. When the supply of water is less than required, the Superintending Engineer controls inter-divisional distribution and the divisional officer that between subdivisions. The internal distribution of water and regulation of supply is primarily in the hands of the subdivisional officers. The *siladār*, who is constantly in touch with all his *patwāris*, indents for water at distributary heads. The subdivisional officer receives reports for all his channels daily and thus controls the distribution. The Executive Engineer supervises the internal distribution by subdivisional

Hill States. Even in the largest States they are employed more as armed police than as a military force, while in the smaller States their services are utilized in the collection of revenue, as well as in the maintenance of order and the performance of ceremonial functions.

On the annexation of the Punjab in 1849 a police force was organized in two branches, a military preventive and a civil detective police, the former consisting of 6 regiments of foot and 27 troops of horse. By the beginning of 1860 its strength had risen from 15,000 to 24,700 men, excluding the Peshāwar and Derajāt Levies, and the *thagi*, cantonment, and canal police, the total cost exceeding 46½ lakhs a year. In 1861 the cis-Indus police were reorganized under the Police Act (V of 1861), which was not completely extended to the six frontier Districts till 1889. Revisions in 1862, 1863, and 1869 reduced the cost of the force to 25 lakhs; and in 1863 the Derajāt, Peshāwar, cantonment, *thagi*, and canal police were brought under the general system of the Punjab. The railway police were organized in 1869. The police of the North-West Frontier Province became a separate force on the constitution of that Province in 1901.

Police and
jails.
Police.
History
and deve-
lopment.

The establishment now consists of a single force controlled by an Inspector-General, who is *ex-officio* under-secretary to Government. He is assisted by three Deputy-Inspectors-General, one of whom is in administrative charge of the railway police and the criminal investigation department. Commissioners of Divisions are also Deputy-Inspectors-General *ex-officio*. Each District has a Superintendent, and the larger Districts each have one or more Assistant Superintendents who (with the exception of the officers in charge of two subdivisions) work under the Superintendent at head-quarters. The unit of administration is the *thāna* or police station under a sub-inspector, and outposts and road-posts are established where necessary. Nearly half the force is armed with Martini-Henry carbines, swords, and batons. The remainder are armed with swords and batons only. The sole military police now maintained are in Dera Ghāzi Khān District, which has two forces, each under the command of an Assistant Commissioner: the Border Military Police proper, and a militia raised in 1901 to take the place of the regular troops recently withdrawn. The training of constables is carried out in the Districts in which they are enrolled. Before promotion to head constable, constables go through a course of instruction at the Police Training School, established at

Organiza-
tion.

Armament.

Military
police.

Training.

Phillaur in 1891. Head constables and sub-inspectors have also to go through a course at this school to qualify for promotion to the higher grades, and all men who receive direct appointments are required to qualify at the school before they are confirmed.

Rural
police.

The village watchmen or *chaukidārs*, who are appointed by the District Magistrate on the recommendation of the village headmen, receive on an average Rs. 3 a month as pay from the village community. They are not as a rule armed, though in some places they carry swords or spears. Their duties are similar to those in other Provinces, but they are regarded as acting under the control of the village headmen, who are jointly

Municipal,
canton-
ment,
ferry, and
railway
police.

responsible for reporting crime. In most municipal towns the regular force is supplemented by a body paid from municipal funds. Cantonments have police paid from Provincial funds, and in some Districts there are ferry police. All these bodies are controlled by the District Superintendent. The railway police, who are responsible for the maintenance of law and order over the whole North-Western Railway system, are organized under a Deputy-Inspector-General. There is no separate detective staff. The system of identification by means of finger-prints is employed, and the training school at Phillaur includes a criminal identification bureau. The strength of the regular District police is now one man to 7.8 square miles or to 1,647 persons; the number of village watchmen exceeds 29,600.

Detection.

Proportion
of police
to area and
popula-
tion.

Criminal
tribes and
punitive
posts.

Nine tribes have been registered under the Criminal Tribes Act. Of these the most important are the Sānsis, Baurias, and Mahtams; they are usually settled in villages under the charge of a police guard, whose duty it is to see that no registered member of the tribe is absent without leave. The imposition of punitive police posts on villages which have miscondacted themselves is not an uncommon feature of the administration.

Jails.
Adminis-
tration.

The jail administration is under an Inspector-General, who is an officer of the Indian Medical Service, as are generally the Superintendents of Central and District jails. The post of Superintendent of a District jail is generally held by the Civil Surgeon. Jails in the Punjab consist of Central and District jails. There are no subsidiary jails, but their place is taken by large lock-ups. The greater portion of the prisoners are confined in barracks, to which the cubicle system is being gradually applied. A jail on this system is being built at Lyallpur.

Mortality
in jails.

The table attached to this article (p. 164) shows how mortality

in jails has decreased since 1881. It must, however, be noted that tuberculous diseases have shown a tendency to increase during recent years. It is hoped that this will be checked by improvements now being made in the ventilation of dormitories, and in the arrangements for cleansing and disinfecting clothing and bedding. It is also intended to build special tuberculous wards in the larger jails; indeed, such accommodation is being provided in two of the Central jails. It will be noticed also that the average cost of prisoners has steadily increased since 1881. The increase is mainly due to higher prices of food-grains and of such articles as woollen and cotton yarns used in the manufacture of clothing and bedding, and also in some measure to expenditure incurred in effecting a general amelioration of the conditions of prison life.

The chief industries carried on in the Central jails are lithographic printing, weaving woollen and cotton fabrics, carpet-making, brick-making, and expressing oil. The greater portion of the out-turn is supplied to Government departments. When opportunity has offered, prisoners have been employed in carrying out large public works: and temporary jails were built at Chenāwan in 1884 and at Mong Rasūl in 1898 in connexion with the excavation of the Chenāb and Jhelum Canals. In District jails the chief industries are paper-making, expressing oil, rope-making, and weaving cotton carpets.

Employment of prisoners.

Until 1903 the Punjab possessed no reformatory, but in that year one was opened at Delhi and placed under the Educational department. Nothing can be said yet with regard to its working.

Boy prisoners' reformatories.

Prior to the constitution of the Punjab in 1849, Government schools existed in the Districts of the Delhi territory which then formed part of the old North-Western Provinces, and in the rest of the Province indigenous schools afforded a foundation for the present educational system. Under the Sikhs, teaching as a profession was almost entirely in the hands of the Muhammadans, who, besides teaching the Korān in the mosques, gave instruction in the Persian classics. On these schools were grafted the earliest Government vernacular schools. Purely Hindu schools were rare, being either colleges in which Brāhman boys learnt Sanskrit and received a half-religious, half-professional training, or elementary schools where sons of Hindu shopkeepers were taught to keep accounts and read and write the traders' scripts. The few Gurmukhī schools that existed were of a purely religious character. The best feature of the indigenous schools was

Education.

enabled the Local Government to devote more adequate funds to education, and the village schools rose rapidly in numbers and efficiency.

As now constituted, the inspecting staff of the department Present organisation. consists of a Director of Public Instruction, 5 Inspectors, 2 Inspectresses, 9 assistant inspectors, 28 District inspectors, 24 assistant District inspectors, and 2 assistants to the Inspectresses. The Director and two of the Inspectors are Europeans and members of the Indian Educational Service, as are the principal and three professors of the Government College, the principal and the vice-principal of the Central Training College, the principal of the Mayo School of Art, and the head master of the Central Model School, Lahore. The rest of the staff is drawn from the Provincial service, which also supplies a professor and five assistant professors to the Government College, the vice-principal of the Mayo School, the assistant superintendent of the Central Training College, the registrar of the office of the Director of Public Instruction, the superintendent, reformatory school, and the reporter on books, Educational department. Four members of this service are Europeans. The assistant inspectors are selected from the Subordinate service, which comprises 197 appointments in all, and supplies teachers to the principal colleges and schools. The majority of the teaching staff, except that of the Government high schools, are, however, employed by local bodies, District boards, and municipal committees, which engage teachers for the schools under their control subject to certain departmental rules, or borrow members from the Subordinate service for the more important posts.

The Punjab University at Lahore was established in 1882. The Punjab University. Prior to that year colleges and schools had been affiliated to the Calcutta University. In 1868 a proposal to establish a Punjab University had been negatived by the Government of India; but a grant-in-aid of Rs. 21,000, equal to the annual income from private sources, was sanctioned for the improvement of the existing Government College at Lahore, and in 1870 Sir Donald McLeod inaugurated the new Punjab University College. The senate of this institution established an Oriental school and college at Lahore, its objects being to promote the diffusion of European science, as far as possible, through the medium of the vernacular languages, and the improvement and extension of vernacular literature generally; to afford encouragement to the enlightened study of Eastern classical languages and literature; and to associate the learned

and influential classes with Government in the promotion and supervision of popular education.

In 1877, on the occasion of the Imperial Assemblage at Delhi, the movement in favour of a Punjab University was revived and resulted in its incorporation under Act XVII of 1882. The University was empowered to grant degrees in Medicine in 1886, and degrees in Law and Science in 1891. There are five Faculties—Oriental Learning, Arts, Law, Medicine, Science and Engineering. The Syndicate is the executive committee of the Senate. Under the Indian Universities Act of 1904 the Senate has been reconstituted. It now consists of 75 ordinary fellows, of whom 60 are nominated by the Chancellor and 15 elected by the Chancellor's nominees. There are also 10 *ex-officio* fellows, 2 of whom are also ordinary fellows.

Collegiate
education.

Prior to 1870 the Calcutta University had dominated the higher secondary education of the Punjab; but soon after that year the Lahore College began to hold its own examinations, which were better adapted to the requirements of the Province. After its incorporation as a university the number of graduates was at first very small, only 16 qualifying in 1883-4, in which year the expenditure was Rs. 21,000. In the next six years, however, progress was rapid. Diplomas, being passports to higher employment under Government, were eagerly sought after, and in 1889-90 as many as 41 students graduated, and the expenditure had risen to Rs. 60,912.

In 1883-4 there were only three Arts colleges: the Government and Oriental Colleges at Lahore, and St. Stephen's College at Delhi. The number of candidates for matriculation was 551, and of passes 224, the average cost of each student's education being Rs. 400, and the total expenditure on colleges Rs. 79,223. By 1889-90 the number of Arts colleges had risen to seven, and that of matriculation candidates to 1,016. Passes had increased to 462, and the expenditure to Rs. 2,06,346, while the cost of each student's education had fallen by Rs. 65, owing to the levy of higher fees and the larger number of students. In 1888 the Dayānand Anglo-Vedic School at Lahore, established by the Arya Samāj, was raised to the status of a college, and became in a few years one of the most largely attended in the Province. Another important unaided institution, the Islāmiya College at Lahore, was opened in 1892 by the Muhammadan community; and in 1897 the Sikhs established the Khālṣa College at Amritsar. By 1900-1 the number of Arts colleges had risen to 12, with

2,148 matriculation candidates and 1,214 passes. Expenditure had risen to Rs. 2,89,582, but the average cost of a student's education was only Rs. 185, or less than half its cost in 1883-4.

The only college which imparts higher professional teaching is the Lahore Medical College. Established in October, 1860, it was raised to collegiate status in 1870. In the latter year it had 68 students. In 1887-8 a monthly fee of Rs. 2 was imposed. In 1889 the erection of the Lady Lyall Home for female students added to its usefulness.

The Law School at Lahore is of collegiate status, and prepares students for the degree of Bachelor of Laws. Founded in 1870 with two departments, an English and a vernacular, and a two years' course, it was remodelled in 1889-90, and the course extended to three years, only graduates in Arts being admitted to the Licentiate in Law examinations. In 1891-2 intermediate and LL.B. classes were formed, and two sets of examinations prescribed, one leading to the Licentiate, the other to the LL.B. degree. In 1897-8 the number of students had reached 434, the highest limit; but the supply for trained lawyers was in excess of the demand, and in the next three years the numbers fell to 248.

The following table shows the chief results of university examinations :—

Passes in	1883-4.	1890-1.	1900-1.	1903-4.
Matriculation	224	384	1,214	1,121
First or Intermediate in Arts or Science	39	87	244	233
Ordinary Bachelors' degrees	13	41	127	133
Higher and special degrees	3	8	42	42

Secondary schools are either middle or high. A middle school usually contains a primary as well as a middle department. A high school, in addition to its high department, usually contains these two also. The middle course extends over three classes, and terminates in the case of vernacular schools in the middle school examination. The high-school course extends over two years, and ends with the entrance examination of the Punjab University. English is not taught in the vernacular schools, and is commenced only at the upper primary stage in the Anglo-vernacular schools. The vernacular is thus the medium of instruction for all departments up to the third middle class, English being the medium only in the high department.

The effective organization of secondary education dates from

character, by the offer of liberal grants-in-aid on easy conditions. The system was accordingly reorganized, the management of the schools being transferred to local bodies, which were, on the other hand, required to devote a fixed proportion of their income to primary education. Revised grant-in-aid rules provided for payment by results and staff grants to certificated teachers employed in aided schools. Specially liberal grants were made to indigenous and low-caste schools. The introduction of inter-school rules and good-conduct registers conduced to the moral, as the gymnastic instruction did to the physical, progress of the boys. The recommendations of the Education Commission of 1883 rendered it possible to give effect in greater detail and with greater precision to the policy inaugurated by Sir Charles Aitchison. Schools and scholars increased in numbers and efficiency, though the imposition in 1886 of higher fees on sons of non-agriculturists reduced the number of boys of that class in the lower primary department. By 1889-90 the number of aided schools had risen to 300, with 10,000 pupils; and they continued to progress until 1896-7, when the growing popularity of the Government schools, combined to some extent with the pressure of bad seasons, checked their advance. On the other hand, the District boards, with many pressing calls on their resources, could not meet the demand for primary education. Numerically, primary schools show but a slow advance, but in efficiency their progress has been marked. The abolition of the lower primary examination in 1898 enabled the course of instruction to be made continuous for fully five years, and permitted controlling officers to devote more time to questions of organization and discipline, methods of instruction, and so on, at their inspections. In the upper primary department more time was allotted to object lessons and elementary science.

In 1886 the necessity of a simpler and more practical curriculum for sons of agriculturists led to the establishment of *zamindāri* schools. In these, half-time attendance only is required, and they are closed during each harvest. Elementary reading and writing, in the character chosen by the people, and arithmetic by native methods, are taught. Qualified teachers in these schools received extra pay, and arrangements were also made to train teachers in those subjects in the normal schools. From 1886 to 1892 the schools prospered; but the people then began to realize that they led to nothing, as they did not fit boys for Government employ, and

of trained and experienced men to assist in revising and improving the training school system in the United Provinces. There were at first two classes: the senior English, which prepared teachers for higher work in English secondary schools; and the senior vernacular, which trained men for all kinds of purely vernacular teaching in secondary schools. In 1883-4 a junior English class was opened, to train teachers for the primary classes of Anglo-vernacular schools. With the extension of university education, the preliminary educational qualifications were raised; and since 1896 only B.A.'s, or those who have read up to that standard in a recognized college, are admitted to the senior English class. For admission to the junior English class men must have either passed the intermediate examination or attended the classes of a college for two years. In 1904 this institution was completely reorganized. The staff has been strengthened, the period of study has been raised to two years, a clerical and commercial class has been added, and the number of available stipends much increased. A teacher's degree examination, open to all graduates in Arts who have attended the Central Training College for another year after passing the senior Anglo-vernacular certificate examination, has also been instituted.

Normal schools were originally founded to train teachers for both middle and primary schools, but have been restricted to training for the latter alone since the organization of the Central Training College. The schools are under the control of the Inspectors; and in pursuance of the policy of having one in each circle, normal schools were established at Jullundur in 1887 and at Multān in 1891. Normal schools.

Prior to 1886 the Medical and Veterinary Colleges, the Law School, the Engineering Class of the Punjab University, and the Mayo School of Industrial Art were the only real technical institutions in the Province, the few so-called industrial schools being mere workshops in which inferior articles were made at a high cost. In the three following years, however, some progress was made, the chief step being the establishment of the Railway Technical School at Lahore to provide instruction for the children of the railway workshop employés. This school has a primary and a middle department; the course of study is much the same as in the ordinary schools, with a progressive course of carpentry, drawing, and practical geometry. The functions of the Mayo School were also extended, and private industrial schools were encouraged. An entrance examination in science and a clerical and commercial examination were Technical education.

also instituted, the one in 1897, and the other in 1900. The movement thus begun bears fruit, and some industrial schools have sprung up at the larger training centres, such as Amritsar, Ludhiāna, and Delhi; but the number of students is still small. In ordinary schools also the course of study has been remodelled, so as to include practical mensuration and agriculture in primary schools, and to develop the powers of observation by object lessons.

European
education.

The schools for Europeans and Eurasians in the Punjab were included in the scope of Archdeacon Baly's inquiry in 1881. No less than 440 children of school-going age were then found to be receiving no education whatsoever. Under the Resolution of the Government of India passed in that year, however, the grants to existing schools were increased, and Rs. 11,945 was given by Government for enlarging school-houses. The absence of an enactment making attendance at school compulsory, the apathy of parents, and the migratory character of the European and Eurasian community have been great obstacles to advancement. The schools, especially in the plains, labour under many disadvantages, the lack of trained teachers being specially felt. Of recent years the progress made has, nevertheless, been considerable. In 1903, 46 Europeans and Eurasians passed the matriculation, 94 the middle, and 102 the primary school examination.

Muham-
madan
education.

When in 1871 attention was first directed to the backwardness of education among Muhammadans in India, inquiry showed that in the Punjab the Musalmān community had availed itself of the facilities offered as fully in proportion to its numbers as the Hindus. Much had been done to foster the study of Arabic and Persian. Indeed, the latter had been favoured at the expense of vernacular languages and literatures, and it was felt that no special measures for the advancement of Muhammadan education were required. It was, however, found that Muhammadans seldom prosecuted their studies beyond the middle schools, and that few attended colleges. Muhammadan boys spent years in learning the Korān by rote in the mosques, and thus reached manhood before their education could be completed. The poverty of the Muhammadans as a community, and the fact that they were mostly agriculturists, also militated against their higher education. Progress was, however, made, and in 1883-4 the Muhammadan college students were thrice as numerous as in 1870-1. Nevertheless, their number in the secondary schools and colleges remained proportionately far below that of the Hindus, and the necessity

of special measures was realized. In 1887 Jubilee scholarships (now called Victoria scholarships), tenable in high schools and colleges, were founded by Government; and local bodies were authorized to establish them for middle schools. In addition, half the free or semi-free studentships in secondary schools and scholarships were reserved for Muhammadan boys. The community itself also began to realize the necessity for self-help, and various societies were started which organized Anglo-vernacular Muhammadan schools in the cities and large towns. The result was a rapid advance in higher Muhammadan education, though the Hindus and Sikhs still retained the lead. In the ensuing decade the community showed a growing preference for the public schools, especially those in which English was taught, and availed itself fully of the scholarships and studentships offered, though the societies continued to maintain many schools with or without Government grants-in-aid. The following table shows the number of Muhammadans under instruction in public institutions:—

	1891.	1901.	1904.
Arts colleges	123	309	338
Secondary schools	13,900	19,512	21,133
Primary schools	36,252	43,772	50,440
Special schools	513	1,224	1,103

In 1883-4 the proportion of the population of school-going age in the Punjab under instruction was 4.2 in 100, and in the course of the next six years it rose to 7.8 per cent., but since then it has showed no advance. This is mainly due to the steady decline of private schools, which do not conform to any of the departmental standards, and are not inspected by the department. People either send their boys to the public schools, or keep them at home to help in domestic or other work. The percentage of males in British Districts able to read and write was 6.8 according to the Census of 1901, and that of females 0.37. The most advanced Districts are Simla, Amritsar, and Multān; the most backward are Hissār, Rohtak, and Gurgaon.

General
educational
results.

Fees in Government schools and colleges are fixed, and the proportion of free and half-rate studentships is also specified. Schools and colleges which receive aid from Government are bound to observe the rules laid down for them in this behalf. Unaided schools, however, are quite free in the matter of fees. The majority of them charge very low fees, as compared with

Finance.

the Government and aided institutions. The following table shows the main features of educational finance in 1903-4:—

EXPENDITURE ON INSTITUTIONS MAINTAINED OR AIDED
BY PUBLIC FUNDS

	Pro- vincial revenues.	District and municipal funds.	Fees.	Other sources.	Total.
	Ra.	Ra.	Ra.	Ra.	Ra.
Arts and professional colleges	1,71,718	7,983	68,282	28,198	2,76,181
Training and special schools	1,05,748	10,930	8,760	28,665	1,54,103
Secondary boys' schools	1,00,549	2,77,256	4,42,744	99,424	9,19,973
Primary boys' schools .	8,123	3,58,909	91,897*	...	4,58,929
Girls' schools . . .	69,904	63,141	42,303	79,936	2,55,284
Total	4,56,042	7,18,219	6,53,986	2,36,223	20,64,470

* Including receipts from other sources.

Registered
publica-
tions.

In 1901 the number of publications registered under the Printing Press and Books Act was 1,478. Of these, 425 were poetical works and 409 religious treatises. Language and pictures came next, with 113 and 82 respectively. Except perhaps in its popular poetry modern Punjab literature displays little originality, and many of its productions are merely translations of English works into the various languages and scripts of the Province.

News-
papers.

The number of newspapers published in 1903 was 209. The only important English newspapers are the *Civil and Military Gazette* and the *Morning Post*, published daily at Lahore and Delhi respectively. The native-owned newspapers include 31 published in English, 1 in English and Urdu, 164 in Urdu, 6 in Hindi, and 7 in Gurmukhi. The leading papers are more or less actively political, their columns being devoted mainly to the criticism of Government measures and policy. Generally speaking, these journals are either sectarian, or the mouthpieces of various classes or cliques of the educated community. Few are of much importance, and many are little more than advertising sheets. The *Tribune* and the *Observer*, published in English at Lahore, are the leading Hindu and Muhammadan organs respectively.

Medical.

The Civil Medical department is controlled by an Inspector-General of Civil Hospitals. The department was organized in 1880, prior to which year hospitals were under the Inspector-General of Prisons. Each District is under the medical charge

of a Civil Surgeon, who is stationed at the District headquarters (Simla has two officers of this class); but in the summer months a Civil Surgeon is stationed also at Murree, and the Civil Surgeon of Gurdāspur District is transferred to Dalhousie. As a rule, the chief hospital of each District is at its headquarters, and is in charge of a Civil Assistant Surgeon, who after a five years' course at the Lahore Medical College has qualified for the diploma of Licentiate of Medicine and Surgery of the Punjab University; the minor hospitals and dispensaries in the outlying towns of the District are in charge of Hospital Assistants who have qualified by a four years' course at the college. Their work is supervised by the Civil Surgeon, who is required to inspect each dispensary four times a year.

The progress made since 1881 may be gathered from the table attached to this article (p. 166). The number of hospitals and dispensaries has risen by 44 per cent., and in-patients in much the same ratio, while out-patients have more than doubled. The contribution from Government has slightly decreased; but the income from Local and municipal funds has more than doubled, and that from fees, endowments, and other sources has also increased very largely.

The only institution maintained by Government is the Mayo Hospital at Lahore, an integral part of the Medical College, to which it affords medical instruction. Before the establishment of this college the Subordinate medical service was recruited from the Calcutta College, whose candidates were mostly Bengalis. Partly to obtain recruits locally, and partly with the object of popularizing Western medicine throughout the Province, a medical school was established in 1860 at Lahore, and in 1870 its status was raised to that of a college. The buildings consist of one large block, containing three class-rooms, a dissecting room, a chemical laboratory, several museums, and a large central hall, to which have been added in recent years a large and well-equipped dissecting room with a lecture theatre capable of accommodating 400 students, and a pathological and physiological teaching laboratories, with a post-mortem theatre and mortuary. The teaching staff now consists of 8 professors, 6 lecturers, a demonstrator of anatomy, and 3 class assistants. A hostel for female students was built in 1889 by the Punjab committee of the Countess of Dufferin's Fund, chiefly from a donation of Rs. 50,000 given by the Mahārāja of Kashmir. Arrangements have been made for a similar hostel for male students at a cost of over Rs. 2,00,000. The growth of the college is apparent from the fact that in

1903 it trained 234 students in the English class and 308 in the Hospital Assistant class, compared with 8 and 44 respectively in 1860.

Lunatics. In 1900 a central asylum for lunatics was constructed at Lahore at a cost of 2 lakhs. It is controlled by a commissioned medical officer, with a military Assistant Surgeon as deputy-superintendent. It has accommodation for 468 patients; and in 1903 a separate building, capable of accommodating 120 female lunatics, was erected at a cost of Rs. 74,000. The daily average number of inmates in 1904 was 554. The record of the alleged cause of insanity is usually drawn up by the police and has little scientific value. Of the cases treated in 1904 in which any cause is assigned, 16.59 per cent. were attributed to the excessive use of Indian hemp in one form or another, 8.09 to epilepsy, 0.71 to heat, and 7.09 to moral causes, such as grief, worry, and disappointment.

Pasteur Institute and Research Institute. At Kasauli, a Pasteur Institute was established in 1901 for the treatment of persons bitten by rabid animals, which now treats patients from all parts of India. In 1906 a central Research Institute was founded there, which will provide means for the scientific study of the etiology and nature of disease in India, besides the preparation of curative sera for the diseases of man, and the training of scientific workers. The institution is in charge of a Director, with a staff of assistants.

Vaccination. The practice of inoculation as a protection from small-pox has prevailed in the Punjab from time immemorial. The method adopted was to keep dry crusts from the pustules mixed with a few grains of rice in a box; when a mild form of the disease was desired, a few of the grains of rice were inserted into a wound near the base of the thumb, while a severe attack was procured by inserting a little of the powdered crusts. The practice was most prevalent among Muhammadans, and was performed by Saiyids and Mullās as a *quasi*-religious ceremony. The Hindus of the South-East Punjab did not protect themselves for fear of offending the goddess of small-pox, but elsewhere Rājputs and Nais (barbers) usually acted as inoculators among Hindus. The practice was largely prevalent in Rāwalpindī, Jhang, and Shāhpur Districts as late as 1887, and to a less extent in Karnāl, Hoshiārpur, Kāngra, Multān, and Dera Ghāzi Khān. With a few exceptions, the attempt to enlist the inoculating classes as vaccinators was not successful. Vaccination is now under the charge of the Sanitary Commissioner, and Civil Surgeons are primarily

responsible for vaccinations in their Districts. The staff consists of 5 divisional inspectors, 28 superintendents, and 260 vaccinators. The falling-off of vaccination in 1901 shown in the table attached to this article (p. 166) is chiefly due to plague. Vaccination is compulsory in twenty-three municipal towns.

The success of the system of selling quinine through the Sale of post office in Bengal led to its introduction into the Punjab ^{quinine.} late in 1894. First introduced experimentally in the Delhi Division, it was extended in 1899 to that of Lahore, and it is now proposed to extend it to all the Districts of the Province, although in 1901 the total sales only amounted to 293 parcels, each containing 102 five-grain packets of quinine. The small measure of success which the system has met with is not easily explained, though it may in part be accounted for by the reluctance of the literate classes, from which the post office officials are drawn, to act as drug-vendors. It is, however, apparent that the people are at present indifferent to the advantages of the system, and, as a rule, little aware of the value of quinine as a prophylactic. In Kāngra, however, in 1905 some 2,300 packets, each containing 102 powders of seven grains each, were distributed at a total cost of Rs. 3,669.

The chief defects of village sanitation are the impurity and ^{Village sanitation.} contamination of drinking water, the accumulation of filth, the presence of manure-heaps near the houses, and the existence of ponds of stagnant water in or around the village site. It has been considered inadvisable to legislate for the compulsory sanitation of villages, but District boards are empowered to grant rewards in the form of a reduction of revenue to the villages most active in sanitary improvements.

Surveys in the Punjab have been carried out by two distinct ^{Surveys.} agencies, the local *patwāris* effecting the cadastral or field surveys, and the Survey of India compiling maps based on triangulation. When the revision of a settlement is undertaken, the maps, measurements, and records-of-rights of ownership and actual possession are thoroughly revised by the Settlement officer and a special staff of *tahsildārs*, *naiib-tahsildārs*, and field *kānungos*. On the conclusion of the operations these records are transferred to the custody of the Deputy-Commissioner, who is henceforth responsible for their maintenance, and correction when necessary. Briefly, the system in force is this: the *patwāri* makes a field-to-field inspection at each harvest, noting all changes in rights, rents, and possession, and all amendments required in the field map. The changes thus noted are recorded, after attestation by a superior revenue

The survey of Kāngra, Kulū, the hills of Hoshiārpur, and the Simla Hill States was completed in 1903. The whole of the Punjab plains, with the exception of Hissār, was surveyed between 1846 and 1880, village by village, on the 4-inch scale, and Hissār was surveyed on the 2-inch scale between 1882 and 1884. In 1883 arrangements were made with the Surveyor-General for the revision of the survey maps on the basis of the village maps; and in 1884 a party of the Survey of India commenced compiling new maps from reductions of these village plans, checking and revising them in the field, and completed maps of Jullundur, Ludhiāna, Ferozepore, Ambāla, and Jhang Districts, and of the plains portions of Hoshiārpur. To enable this work to be extended, traverses were run over Shāhpur, Gujrāt, Gujrānwāla, Siālkot, Gurdāspur, and Amritsar Districts. The party was withdrawn in 1889, but in 1901 the work was recommenced. Lahore was completed by 1906, and the work is progressing in Amritsar, Montgomery, Multān, and Muzaffargarh. In addition to this, riverain surveys are being carried out to enable boundaries to be relaid in the areas subject to floods. Several lines of spirit-levels have also been run through portions of the Province. The Cis-Sutlej States were surveyed during 1846-7 on the 1 inch to the mile scale, and Patiāla, Jind, Nābha, &c., in 1861-2 on the same scale. The large State of Bahāwalpur was surveyed during 1869-75, the inhabited area village by village on the 4-inch, and desert tracts on the 2-inch scale. Kapūrthala State was resurveyed when Jullundur was surveyed between 1884 and 1889.

[K. B. Saiyid Muhammad Latif: *History of the Punjab* (Calcutta, 1891).—J. W. McCrindle: *The Invasion of India* (Calcutta, 1893).—J. D. Cunningham: *History of the Sikhs* (second edition, 1853).—Sir C. Gough and A. D. Innes: *The Sikhs and the Sikh War* (1897).—Sir H. B. Edwardes: *A Year on the Punjab Frontier*, 2 vols. (1851).—Sir L. H. Griffin: *The Rajas of the Punjab* (second edition, 1873), and *Ranjit Singh* (Oxford, 1892).—C. J. Rodgers: *Revised List of Objects of Archaeological Interest in the Punjab* (Lahore, 1895).—H. G. Raverty: *Tabakāt-i-Nāsiri*.—W. Francklin: *Memoirs of George Thomas* (Calcutta, 1803).—J. B. Fraser: *Memoirs of James Skinner*, 2 vols. (1851).—H. Pearse: *Memoirs of Alexander Gardner* (1898).—Sir J. W. Kaye: *Life of Lord Metcalfe*, 2 vols. (second edition, 1858).—Sir H. M. Lawrence: *Adventures of an Officer in the Service of Ranjit Singh*, 2 vols. (1845).—L. J. Trotter: *Life of John Nicholson* (1898).—Sir H. B. Edwardes and H. Merivale: *Life of Sir Henry Lawrence*,

TABLE I. TEMPERATURE IN THE PUNJAB

Station.	Height in feet of Observatory above sea-level.	Average temperature (in degrees Fahrenheit) for twenty-five years ending with 1901 in									
		January.			May.		July.		November.		
		Mean.	Diurnal range.	Mean.	Diurnal range.	Mean.	Diurnal range.	Mean.	Diurnal range.		
Delhi	718	59.0	23.3	93.6	34.1	87.7	13.6	69.8	36.4		
Lahore	702	54.8	27.7	89.3	32.9	90.4	21.1	65.8	36.1		
Rāwālpindī	1,676	50.3	24.6	82.9	29.5	87.1	21.1	65.6	33.2		
Siālkot *	830	54.4	23.0	88.7	28.2	88.8	18.1	65.8	30.7		
Mulān	430	56.5	26.6	91.8	28.8	94.0	20.1	68.6	31.6		
Montgomery +	558	55.0	26.4	92.9	29.8	94.3	21.2	68.0	33.2		
Hill Station—Simla ‡	7,324	39.4	10.1	65.8	14.8	64.8	9.1	50.6	11.0		

NOTE.—The diurnal range is the average difference between the maximum and minimum temperatures of each day.

† The figures are for nine to ten years only.

TABLE II. RAINFALL IN THE PUNJAB

Station.	Average rainfall (in inches) for twenty five years ending with year in												
	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Total of year.
Delhi	1.26	0.70	0.50	0.27	0.69	3.35	7.98	8.03	3.95	0.27	0.11	0.64	27.65
Lahore	1.14	1.20	0.67	0.54	0.83	1.86	5.94	5.00	3.11	0.21	0.12	0.46	20.08
Rawalpindi	2.92	2.35	1.84	1.90	1.61	1.88	8.00	7.98	3.37	0.55	0.47	1.03	33.90
Sialkot	3.54	1.84	1.13	1.00	1.04	2.77	7.95	9.08	2.86	0.28	0.25	0.73	31.46
Multan	0.41	0.42	0.34	0.15	0.38	0.55	2.12	1.92	0.65	...	0.07	0.26	7.27
Montgomery	0.57	0.80	0.43	0.21	0.52	1.19	2.82	2.20	0.82	0.06	0.08	0.29	9.99
Hill Station—Simla	3.02	3.25	2.22	1.73	3.20	7.41	16.54	17.63	5.57	0.98	0.48	1.50	63.63

TABLE III. DISTRIBUTION OF POPULATION, PUNJAB, 1901

	Area in square miles.	Number of towns.	Number of villages.	Total population.			Urban population.			Persons per square mile in rural areas.
				Persons.	Males.	Females.	Persons.	Males.	Females.	
<i>British Territory.</i>										
Hissar	5,217	8	954	781,717	418,107	363,610	97,093	51,602	46,493	131.1
Rohilk	1,297	21	491	530,672	333,717	247,455	92,412	46,625	45,787	89.5
Gurgaon	1,684	8	1,171	746,268	394,413	351,855	70,771	36,430	34,341	337.4
Delhi	1,390	4	714	883,039	371,864	511,175	231,381	126,344	105,037	359.5
Karnal	3,453	7	1,353	883,225	475,953	407,272	99,368	46,571	52,797	211.5
Ambala	1,631	7	1,218	615,886	431,581	384,299	125,602	72,210	53,392	372.8
Simla	304	6	45	404,351	261,164	243,187	15,932	13,530	5,322	212.4
Total, Delhi Division	15,393	51	6,486	4,587,002	2,479,389	2,116,703	733,671	366,292	337,379	250.6
<i>Total, Jullundur Division.</i>										
Kangra	9,678	3	715	768,124	399,106	369,018	16,179	9,482	6,697	75.4
Hoshiarpur	9,244	21	1,177	969,782	525,854	443,928	72,324	36,923	35,401	408.8
Jullundur	1,431	20	1,216	617,182	406,600	406,600	134,927	72,885	62,042	547.4
Ludhiana	1,455	5	864	673,097	369,163	303,933	169,666	46,533	40,133	402.8
Ferozepore	4,399	18	1,593	958,012	524,266	433,766	16,021	9,831	35,693	302.7
Total, Jullundur Division	19,410	37	6,415	4,306,662	2,315,121	1,991,541	395,730	212,134	177,516	301.3
<i>Montgomery</i>										
Lahore	4,721	3	1,371	402,706	208,666	294,040	19,779	11,169	8,611	107.2
Amritsar	3,294	7	1,533	1,162,100	610,449	551,650	289,090	147,934	141,156	246.3
Gurdaspur	1,689	11	1,042	1,003,128	559,855	443,073	186,449	105,983	80,466	326.0
Sialkot	1,991	7	2,244	940,334	590,921	430,363	79,955	38,263	41,692	460.4
Gujranwala	3,198	8	9,318	1,083,009	573,219	510,650	16,580	47,937	41,673	497.4
Total, Lahore Division	17,154	41	9,869	5,990,577	485,260	405,317	78,221	49,864	37,357	254.0
<i>Total, Rawalpindi Division.</i>										
Gujrat	2,754	41	9,869	5,990,577	485,260	405,317	78,221	49,864	37,357	254.0
Shahpur	2,051	4	1,336	750,548	390,402	361,146	700,625	398,135	302,490	286.1
Therum	4,540	5	789	534,259	273,144	261,115	41,893	21,202	20,691	345.5
Rawalpindi	1,113	4	888	591,424	313,038	278,366	55,182	28,421	26,761	566.8
Attock	2,020	0	1,120	518,699	299,893	218,866	89,532	58,823	30,709	162.3
Total, Rawalpindi Division	15,756	19	4,807	2,799,960	1,437,095	1,361,465	231,097	121,156	109,941	261.9

TABLE III. DISTRIBUTION OF POPULATION, PUNJAB, 1901 (continued)

	Area in square miles.	Number of towns.	Number of villages.	Total population.			Union population.			Persons per square mile in rural areas.
				Persons.	Males.	Females.	Persons.	Males.	Females.	
Milnawali	7,816	5	446	494,348	794,008	900,560	99,555	15,031	14,500	50.5
Jhang	6,658	3	1,866	1,000,656	550,908	443,361	49,238	27,198	22,040	44.3
Multan	6,107	4	1,384	710,656	385,370	325,086	10,641	6,043	4,598	98.6
Muzaffargarh	3,635	4	750	280,897	280,897	185,440	10,684	6,098	4,586	108.1
Dera Ghazi Khan	5,306	5	713	471,149	255,313	214,728	43,276	23,664	19,612	80.6
Total, Multan Division	49,516	23	5,086	3,014,075	1,648,404	1,366,214	243,404	133,265	110,099	97.9
Rafioch Trans-Border	...	...	...	94,087	134,59	10,608	...	...	...	...
Total, British Territory	97,009	174	32,663	20,330,139	10,042,295	9,387,634	2,035,067	1,013,993	1,019,174	119.4
<i>Native States.</i>										
Patiala	5,412	14	3,380	1,996,622	877,107	719,495	175,378	95,719	79,659	56.6
Udh	3,050	7	422	384,003	153,379	130,624	44,487	21,077	18,560	191.8
Nabha	928	4	488	997,040	165,385	132,653	36,614	20,964	16,050	281.6
Bahawalpur	15,000	10	960	700,877	395,684	325,893	69,864	38,227	31,637	43.4
Sirmur	1,108	1	973	135,697	73,401	60,396	6,256	3,611	2,645	108.0
Lothara	223	1	96	15,789	8,160	7,669	1,275	7117	3,058	187.8
Dujana	100	2	39	26,174	12,411	11,693	5,543	2,123	2,022	186.3
Pasauli	57	1	40	11,023	11,511	10,422	4,171	2,183	2,090	341.6
Kahla	168	1	181	69,181	36,080	30,201	10,161	5,352	4,770	330.4
Simla Hill States	8,918	3	1,327	389,319	206,206	183,113	1,376	4,773	3,993	64.4
Kapurbhala	630	6	597	314,331	166,797	144,554	47,580	26,468	21,058	423.5
Mandi	1,000	2	446	174,045	90,896	83,149	1,144	4,028	3,016	135.3
Malir Kotla	107	2	115	77,596	41,045	35,501	2,122	10,397	10,397	337.6
Sahel	480	2	115	51,675	28,664	25,212	1,779	1,165	1,014	125.0
Faridkot	649	1	167	124,013	69,321	55,591	3,694	21,195	6,789	163.5
Chamba	3,216	1	1,670	127,151	66,474	61,300	6,000	3,436	2,564	37.9
Total, Native States	36,512	57	10,997	6,404,398	3,409,809	2,974,089	469,006	254,765	209,141	108.4
Grand Total, Punjab	133,521	228	43,660	26,734,217	13,452,114	11,402,223	2,709,073	1,538,058	1,233,215	164.9

NOTE.—The areas given are supplied by the Surveyor-General of India. Lyallpur District was formed in 1904 out of portions of the Districts of Montgomery and Jhang; it has an approximate area of 3,075 square miles and a population of 654,686, and contains 1 town and 1,441 villages.

TABLE IV
STATISTICS OF AGRICULTURE, PUNJAB
(In square miles)

	1888-90 (average).	1891-1900 (average).	1900-1.	1901-4.
Total area	89,067	89,711	89,595	89,270
Total uncultivated area . .	53,644	51,568	48,400	46,958
Cultivable but not cultivated	34,515	32,497	26,635	26,373
Uncultivable (including forests)	19,129	19,071	19,765	20,585
Total cultivated area . . .	35,423	38,143	41,195	42,312
Irrigated from canals . . .	3,160	5,363	8,354	9,336
Irrigated from wells and canals	784	1,117	1,555	1,599
Irrigated from wells	5,674	6,072	5,989	6,124
Irrigated from other sources .	86	133	247	311
Total irrigated area	9,704	12,685	16,145	17,370
Unirrigated area (including inundated)	25,719	25,458	25,050	24,942
<i>Total cropped area.</i>				
Rice	1,085	1,055	1,184	1,074
Wheat	9,575	9,847	11,901	12,216
Other food-grains and pulses	16,454	14,899	19,289	16,668
Oilseeds	1,101	1,311	2,705	1,683
Sugar-cane	538	528	514	517
Cotton	1,181	1,231	1,608	1,637
Hemp (<i>san</i>)	66	66	73	77
Other fibres	2	4	5	4
Opium	22	14	12	14
Indigo	203	134	142	84
Tea	14	15	16	16
Tobacco	86	80	69	84
Miscellaneous	1,783	2,147	3,366	4,137
Total area cropped	32,110	31,331	40,914	38,211
Area double cropped	3,126	3,507	5,721	5,414

TABLE V
PRICES OF STAPLES IN THE PUNJAB
(In seers per rupee)

Selected staples.	Selected centres.	Percentage of area under crop in 1900-1.	Average for ten years ending			Average for the year 1904.
			1880.	1890.	1900.	
Wheat	Delhi . .	29.1	20.39	18.16	15.45	15.87
	Amritsar . .		23.18	21.41	16.73	18.16
	Rāwalpindi . .		22.44	20.46	16.25	17.26
Gram	Delhi . .	12.5	25.77	23.93	21.42	23.35
	Amritsar . .		29.61	28.78	21.99	28.42
	Rāwalpindi . .		26.37	25.58	20.55	24.6
Jowār	Delhi . .	7.0	27.08	23.28	21.60	27.42
	Amritsar . .		31.38	28.37	20.29	29
	Rāwalpindi . .		28.37	29.53	24.08	24.96
Bājra	Delhi . .	10.8	23.65	20.64	18.62	21.75
	Amritsar . .		26.09	22.06	15.94	24.92
	Rāwalpindi . .		28.84	28.63	19.97	22.6
Salt	Delhi . .	...	9.03	11.94	11.24	13.1
	Amritsar . .		10.53	14.09	12.05	15.54
	Rāwalpindi . .		10.45	14.24	13.40	16.02

NOTE.—The figures for the famine years 1878, 1879, 1897, and 1900 have been omitted.

TABLE VI. TRADE BY RAIL AND RIVER OF THE PUNJAB
(including North-West Frontier Province) WITH OTHER
PROVINCES AND STATES (excluding Kashmir and Ladākh)
(In thousands of rupees)

	1890-1.	1900-1.	1903-4.
<i>Imports.</i>			
Cotton, raw	2,92	4,11	5,01
Cotton twist and yarn	28,56	18,31	32,18
Cotton piece-goods	2,72,83	3,20,03	3,97,20
Grain and pulse	23,20	1,34,15	42,77
Hides and skins	5,99	15,75	14,95
Metals and manufactures of metals	70,33	1,05,73	1,59,07
Oils	13,26	18,97	21,33
Oilseeds	8,50	32,58	25,73
Opium	74	4,06	4,07
Provisions	43,00	31,82	35,31
Salt	6,57	10,65	8,14
Spices	13,54	22,64	26,29
Sugar	1,14,21	1,65,58	2,01,39
Tea	9,57	5,66	10,03
Wood . . . . .	...	8,16	30,58
Woollen goods	20,70	33,67	37,44
All other articles	2,64,52	3,60,40	4,70,89
Total	8,98,44	12,92,27	15,12,67
Treasure { Government	37,50	1,91,66	1,89,00
{ Commercial	*	*	1,07,81
Total	*	*	2,96,81
<i>Exports.</i>			
Apparel . . . . .	...	52,31	54,25
Coal and coke	1	19	4
Cotton, raw	35,93	1,06,19	2,55,86
Cotton, manufactured	51,00	75,64	79,24
Wheat	1,97,77	1,65,90	5,45,69
Other grains and pulses	1,02,76	1,06,88	1,04,07
Dyes and tans	10,60	17,47	11,03
Jute and manufactures of jute	4,87	10,55	7,92
Hides and skins	31,32	77,45	63,34
Metals and manufactures of metals	13,44	12,12	17,06
Leather	20,41	13,37	13,73
Oils	2,07	9,68	2,44
Oilseeds	16,08	59,74	43,50
Provisions	29,32	27,43	17,53
Railway plant and rolling stock	10,77	26,73	31,82
Spices	11,30	12,84	12,74
Sugar	21,55	24,62	14,83
Tobacco	86	4,43	2,73
Wool, raw	23,30	23,54	30,04
Wool, manufactured	35,28	57,73	30,07
All other articles	97,22	1,14,82	1,33,26
Total	7,15,86	9,99,63	14,69,19
Treasure { Government	7,19†	36,07	72,01
{ Commercial	*	39,48	40,78
Total	7,19†	75,55	1,12,79

* Not available.

† Currency figures only.

TABLE VII

TRADE OF THE PUNJAB WITH KASHMĪR AND LADĀKH
(In thousands of rupees)

	1890-1 (including trade through Hazra).		1900-1 (including trade through Hazra).		1903-4 (excluding trade through Hazra).	
	Kashmir.	Ladakh.	Kashmir.	Ladakh.	Kashmir.	Ladakh.
<i>Imports.</i>						
Total imports.	54.32	3.42	1,29.15	4.18	98.01	6.31
Treasure :—						
Government	...	...	...	...	10.11	...
Commercial	1.67	...	5.20	1	9.41	...
Total	1.67	...	5.20	1	19.52	...
<i>Exports.</i>						
Total exports.	56.52	2.76	95.64	2.17	78.66	3.07
Treasure :—						
Government	...	...	6.00	...	...	...
Commercial	10	10	3.24	33	4.10	45
Total	10	10	9.24	33	4.10	45

TABLE VIII
STATISTICS OF CRIMINAL JUSTICE, PUNJAB

	Average for ten years ending 1890.	Average for ten years ending 1900.	1901.	1904.	Per- centage of convic- tions in 1904.
Number of persons tried:					
(a) For offences against person and property	100,186	121,939	116,446	134,070	15
(b) For other offences against the Indian Penal Code . . .	21,456	23,151	21,713	26,656	20
(c) For offences against special and local laws	51,255	70,117	63,010	79,791	53
Total	172,897	215,207	201,169	240,517	28

TABLE IX
STATISTICS OF CIVIL JUSTICE AND REVENUE COURT CASES,
PUNJAB

	Average for ten years ending 1890.	Average for ten years ending 1900.	1901.	1904.
Suits for money and movable property	212,313	211,844	201,423	180,105
Title and other suits	37,740	34,363	50,811	30,040
Rent suits*	1,778†	1,201†	275†	497
Other Revenue Court cases† .	20,330†	34,111†	36,415†	32,944
Total	272,161	281,419	268,924	243,586

* The figures for rent suits and other Revenue Court cases for 1881-4 are for insti-
tutions; those for the remaining years for disposals only.

† Other Revenue Court cases include figures for execution of decrees of Revenue
Courts throughout, with the exception of the years 1880-4 and 1888 and 1889, for
which the data are not available.

‡ These figures are for the old Province.

TABLE X
 PRINCIPAL SOURCES OF PROVINCIAL REVENUE, INCLUDING NORTH-WEST FRONTIER PROVINCE
 UP TO MARCH 31, 1901, BUT FOR PUNJAB AS NOW CONSTITUTED FOR THE YEAR 1903-4
 (In thousands of rupees)

	Average for ten years ending March 31, 1890.		Average for ten years ending March 31, 1900.		Year ending March 31, 1901.		Year ending March 31, 1904.	
	Total raised in Province (Imperial, Provincial, and Local).	Amount credited to Provincial revenues.	Total raised in Province (Imperial, Provincial, and Local).	Amount credited to Provincial revenues.	Total raised in Province (Imperial, Provincial, and Local).	Amount credited to Provincial revenues.	Total raised in Province (Imperial, Provincial, and Local).	Amount credited to Provincial revenues.
Land revenue	2,12.73	72.90	2,40.29	98.98	2,43.75	1,12.24	2,33.32	1,11.06
Stamps	35.04	20.84	42.06	20.56	42.80	32.10	40.48	30.36
Excise	13.55	7.98	21.33	6.23	26.01	6.50	28.00	7.00
Provincial rates	33.45	4.84	41.80	5.92	42.28	5.89	44.77	6.18
Assessed taxes	6.96	3.38	12.95	6.47	14.80	7.40	11.70	5.85
Forests	8.52	3.58	10.68	5.34	13.51	6.75	17.18	8.59
Registration	2.10	1.28	3.29	1.65	3.47	1.74	2.19	1.10
Other sources	49.69	40.53	38.80	30.23	44.91	33.16	48.16	30.46
Total	3,62.04	1,55.23	4,11.20	1,84.38	4,31.53	2,05.78	4,25.80	2,30.60

TABLE XII
INCOME AND EXPENDITURE OF MUNICIPALITIES (EXCLUDING
NOTIFIED AREAS), PUNJAB

	1889-90.	Average for ten years 1890-1 to 1899-1900.	1900-1.	1903-4.
	Rs.	Rs.	Rs.	Rs.
<i>Income from—</i>				
Octroi	22,99,144	25,27,057	27,07,406	30,29,966
Tax on houses and lands	1,17,721	1,37,308	1,37,925	2,37,919
Other taxes	42,966	59,162	83,752	1,36,443
Loans . . . . .	...	2,32,919	1,61,489	6,58,325
Rents and other sources	8,76,838	11,46,599	12,85,011	14,85,673
Total income	33,36,669	41,02,945	43,75,583	55,48,316
<i>Expenditure on—</i>				
Administration and col- lection of taxes . .	4,88,016	5,79,243	6,39,495	7,00,054
Public safety . . .	5,14,076	5,66,100	6,39,104	6,93,969
Water-supply and drainage :				
Capital	1,32,494	3,19,308	2,70,744	7,53,443
Maintenance . . .	98,651	1,26,788	1,68,174	2,10,378
Conservancy . . .	3,05,986	4,92,286	5,67,395	5,87,339
Hospitals and dispen- saries	2,65,265	3,31,091	4,01,272	5,87,909
Public works . . .	3,71,801	4,05,426	3,26,225	4,18,253
Education	4,44,628	5,40,690	5,63,852	6,14,382
Other heads	8,14,414	7,09,529	8,10,672	8,50,595
Total expenditure	34,35,331	40,70,551	43,86,933	54,16,342

TABLE XIII
INCOME AND EXPENDITURE OF DISTRICT BOARDS,
PUNJAB

	Excluding the District of Mianwali.			Whole Province.
	1889-90.	Average for ten years 1890-1 to 1899-1900.	1900-1.	1903-4.
<i>Income from—</i>	Rs.	Rs.	Rs.	Rs.
Provincial rates . . .	19,18,304	20,62,940	20,66,918	24,03,661
Interest	1,100	1,124	1,417	1,361
Education	46,858	80,317	1,11,586	1,20,831
Medical	9,326	21,449	25,050	40,662
Scientific, &c.	85,814	86,125	87,428	94,085
Miscellaneous	70,415	1,28,948	2,35,943	2,88,411
Public works	48,233	1,07,151	1,38,919	1,83,233
Pounds	43,436	55,050	53,944	58,273
Ferries	1,44,383	1,51,965	1,62,528	1,51,629
Total income	23,67,769	26,95,069	28,83,531	33,42,146
<i>Expenditure on—</i>				
Refunds	1,967	2,617	3,168	2,318
General administration	1,05,491	1,14,161	1,28,672	1,35,864
Education	4,68,451	5,76,302	6,12,567	6,68,125
Medical	2,59,894	3,16,238	5,61,238	3,77,654
Scientific, &c.	1,15,152	1,45,678	1,52,350	1,33,809
Miscellaneous	4,59,708	6,91,402	8,01,814	10,25,264
Public works	9,14,242	9,16,148	7,56,918	9,04,418
Total expenditure	23,24,905	27,62,546	30,17,027	32,47,452

TABLE XIV

POLICE STATISTICS, PUNJAB (AS NOW CONSTITUTED)

	1881.	1891.	1901.	1904.
<i>Provincial and Ferry Police.</i>				
Superintendents and assistant superintendents	47	53	51	56
Inspectors	44	42	43	49
Sub-inspectors	407	463	401	526
Head constables	1,603	1,666	1,689	1,814
Constables	10,073	9,720	9,767	10,426
<i>Municipal Police.</i>				
Inspectors	6	6	8	8
Sub-inspectors	17	27	34	37
Head constables	339	388	432	448
Constables	3,451	3,538	3,639	3,791
Town watchmen	...	104	124	138
<i>Cantonment Police.</i>				
Inspectors	...	4	4	4
Sub-inspectors	2	5	5	6
Head constables	28	58	60	69
Constables	391	518	531	574
<i>Military Police.</i>				
Commandants and sub-commandants	...	...	3	4
Native officers	Not available.	Not available.	37	14
Non-commissioned officers and men	...	...	245	606
<i>Railway Police.</i>				
Deputy and assistant superintendents	...	...	1	3
Inspectors	5	5	10	10
Sub-inspectors	13	13	23	26
European platform sergeants	...	...	9	18
Head constables	80	90	200	231
Constables	620	681	957	1,108
Chaukidars	84	84	...	7
<i>Rural Police.</i>				
Daffadars and chaukidars	...	...	...	29,645
Total expenditure	Rs. 32,23,323	Rs. 32,75,278	Rs. 33,45,684	Rs. 38,62,429
Average of five years ending 1901 (old Province).				1904 (new Province).
<i>Statistics of cognizable crime.</i>				
Number of cases reported	58,229			85,365
Number of cases decided in the criminal courts	37,397			43,313
Number of cases ending in acquittal or discharge	6,553			12,796
Number of cases ending in conviction	28,957			30,517

TABLE XV
JAILS STATISTICS, PUNJAB

	1881.	1891.	1901.	1904.
Number of Central jails	3	3	4	3
Number of District jails	28	25	24	25*
Number of subsidiary jails (lock-ups)	17	20	19	16
Average daily jail population:—				
(a) Male prisoners:				
In Central jails	3,488	2,996	6,406	4,860
In other jails	8,645	8,033	7,082	6,885
(b) Female prisoners:				
In Central jails	...	...	1	4
In other jails	512	328	327	270
Total	12,645	11,357	13,816	12,019
Rate of jail mortality per 1,000	62.87	28.26	26.64	19.79
Expenditure on jail maintenance	Rs. 7,41,503	Rs. 7,29,382	Rs. 8,98,117	Rs. 7,59,146
Cost per prisoner	58-10-0	64-4-0	65-0-0	64-13-0
Profits on jail manufactures	1,19,953	1,97,678	1,24,834	1,09,658
Earnings per prisoner	10-3-0	18-4-0	10-0-0	10-5-0

* Including female jail at Lahore.

MOUNTAINS, RIVERS, CANALS, AND HISTORIC AREAS

Himālayas, The.—A system of stupendous mountain ranges, lying along the northern frontiers of the Indian Empire, and containing some of the highest peaks in the world. Literally, the name is equivalent to 'the abode of snow' (from the Sanskrit *hima*, 'frost,' and *ālaya*, 'dwelling-place'). To the early geographers the mountains were known as Imaus or Himaus and Hemodas; and there is reason to believe that these names were applied to the western and eastern parts respectively, the sources of the Ganges being taken as the dividing line. 'Hemodas' represents the Sanskrit *Himāvata* (Prākṛit *Hemota*), meaning 'snowy.' The Greeks who accompanied Alexander styled the mountains the Indian Caucasos.

Modern writers have sometimes included in the system the Muztāgh range, and its extension the Karakoram; but it is now generally agreed that the Indus should be considered the north-western limit. From the great peak of Nanga Parbat in Kashmīr, the Himālayas stretch eastward for twenty degrees of longitude, in a curve which has been compared to the blade of a scimitar, the edge facing the plains of India. Barely one-third of this vast range of mountains is known with any degree of accuracy. The Indian Survey department is primarily engaged in supplying administrative needs; and although every effort is made in fulfilling this duty to collect information of purely scientific interest, much still remains to be done.

A brief abstract of our knowledge of the Himālayas may be given by shortly describing the political divisions of India which include them. On the extreme north-west, more than half of the State of KASHMĪR AND JAMMU lies in the Himālayas, and this portion has been described in some detail by Drew in *Jammu and Kashmir Territories*, and by Sir W. Lawrence in *The Valley of Kashmīr*. The next section, appertaining to the Punjab and forming the British District of Kāngra and the group of feudatories known as the Simla Hill States, is better known. East of this lies the Kumaun Division of the United Provinces, attached to which is the Tehri

State. This portion has been surveyed in detail, owing to the requirements of the revenue administration, and is also familiar from the careful accounts of travellers. For 500 miles the State of Nepāl occupies the mountains, and is to the present day almost a *terra incognita*, owing to the acquiescence by the British Government in the policy of exclusion adopted by its rulers. Our knowledge of the topography of this portion of the Himālayas is limited to the information obtained during the operations of 1816, materials collected by British officials resident at Kātmāndu, notably B. H. Hodgson, and the accounts of native explorers. The eastern border of Nepāl is formed by the State of Sikkim and the Bengal District of Darjeeling, which have been graphically described by Sir Joseph Hooker and more recently by Mr. Douglas Freshfield. A small wedge of Tibetan territory, known as the Chumbi Valley, separates Sikkim from Bhutān, which latter has seldom been visited by Europeans. East of Bhutān the Himālayas are inhabited by savage tribes, with whom no intercourse is possible except in the shape of punitive expeditions following raids on the plains. Thus a stretch of nearly 400 miles in the eastern portion of the range is imperfectly known.

Divisions
of range.

In the western part of the Himālayas, which, as has been shown, has been more completely examined than elsewhere, the system may be divided into three portions. The central or main axis is the highest, which, starting at Nanga Parbat on the north-west, follows the general direction of the range. Though it contains numerous lofty peaks, including Nandā Devī, the highest mountain in British India, it is not a true watershed. North of it lies another range, here forming the boundary between India and Tibet, which shuts off the valley of the Indus, and thus may be described as a real water-parting. From the central axis, and usually from the peaks in it, spurs diverge, with a general south-easterly or south-westerly direction, but actually winding to a considerable extent. These spurs, which may be called the Outer Himālayas, cease with some abruptness at their southern extremities, so that the general elevation is 8,000 or 9,000 feet a few miles from the plains. Separated from the Outer Himālayas by elevated valleys or *dūns* is a lower range known as the Sīwālīks, which is well marked between the Beās and the Ganges, reappears to the south of central Kumaun, and is believed to exist in Nepāl. Although the general character of the Himālayas in Nepāl is less accurately known, there is reason to suppose that it approximates to that of the western ranges.

Within the limits of this great mountain chain all varieties of scenery can be obtained, except the placid charm of level country. Luxuriant vegetation clothes the outer slopes, gradually giving place to more sombre forests. As higher elevations are reached, the very desolation of the landscape affects the imagination even more than the beautiful scenery left behind. It is not surprising that these massive peaks are venerated by the Hindus, and are intimately connected with their religion, as giving rise to some of the most sacred rivers, as well as on account of legendary associations. A recent writer has vividly described the impressions of a traveller through the foreground of a journey to the snows in Sikkim¹ :—

'He sees at one glance the shadowy valleys from which shining mist-columns rise at noon against a luminous sky, the forest ridges, stretching fold behind fold in softly undulating lines—dotted by the white specks which mark the situation of Buddhist monasteries—to the glacier-draped pinnacles and precipices of the snowy range. He passes from the zone of tree-ferns, bamboos, orange-groves, and *dal* forest, through an endless colonnade of tall-stemmed magnolias, oaks, and chestnut trees, fringed with delicate orchids and festooned by long convolvuluses, to the region of gigantic pines, junipers, firs, and larches. Down each ravine sparkles a brimming torrent, making the ferns and flowers nod as it dashes past them. Superb butterflies, black and blue, or flashes of rainbow colours that turn at pleasure into exact imitations of dead leaves, the fairies of this lavish transformation scene of Nature, sail in and out between the sunlight and the gloom. The mountaineer pushes on by a track half buried between the red twisted stems of tree-rhododendrons, hung with long waving lichens, till he emerges at last on open sky and the upper pastures—the Alps of the Himālaya—fields of flowers : of gentians and edelweiss and poppies, which blossom beneath the shining store-houses of snow that encompass the ice-mailed and fluted shoulders of the giants of the range. If there are mountains in the world which combine as many beauties as the Sikkim Himālayas, no traveller has as yet discovered and described them for us.'

The line of perpetual snow varies from 15,000 to 16,000 feet on the southern exposures. In winter, snow generally falls at elevations above 5,000 feet in the west, while falls at 2,500 feet were twice recorded in Kumaun during the last century. Glaciers extend below the region of perpetual snow, descending to 12,000 or 13,000 feet in Kulū and Lahul, and even lower in Kumaun, while in Sikkim they are about 2,000 feet

¹ D. W. Freshfield in *The Geographical Journal*, vol. xix, p. 453.

lakes, some of considerable beauty, are situated in the outer ranges in Naini Tāl District. In 1903 the GOHNA LAKE, in Garhwāl District, was formed by the subsidence of a steep hill, rising 4,000 feet above the level of a stream which it blocked.

The geological features of the Himālayas can be conveniently grouped into three classes, roughly corresponding to the three main orographical zones: (1) the Tibetan highland zone, (2) the zone of snowy peaks and Outer Himālayas, and (3) the Sub-Himālayas. Geology¹.

In the Tibetan highlands there is a fine display of marine fossiliferous rocks, ranging in age from Lower Palaeozoic to Tertiary. In the zone of the snowy peaks granites and crystalline schists are displayed, fringed by a mantle of unfossiliferous rocks of old, but generally unknown, age, forming the lower hills or Outer Himālayas, while in the Sub-Himālayas the rocks are practically all of Tertiary age, and are derived from the waste of the highlands to the north.

The disposition of these rocks indicates the existence of a range of some sort since Lower Palaeozoic times, and shows that the present southern boundary of the marine strata on the northern side of the crystalline axis is not far from the original shore of the ocean in which these strata were laid down. The older unfossiliferous rocks of the Lower Himālayas on the southern side of the main crystalline axis are more nearly in agreement with the rocks which have been preserved without disturbance in the Indian Peninsula; and even remains of the great Gondwāna river-formations which include our valuable deposits of coal are found in the Darjeeling area, involved in the folding movements which in later geological times raised the Himālayas to be the greatest among the mountain ranges of the world. The Himālayas were thus marked out in very early times, but the main folding took place in the Tertiary era. The great outflow of the Deccan trap was followed by a depression of the area to the north and west, the sea in eocene times spreading itself over Rājputāna and the Indus valley, covering the Punjab to the foot of the Outer Himālayas as far east as the Ganges, at the same time invading on the east the area now occupied by Assam. Then followed a rise of the land and consequent retreat of the sea, the fresh-water deposits which covered the eocene marine strata being involved in the movement as fast as they were formed, until the Sub-Himālayan zone river-deposits, no older than the pliocene, Age and origin of the range.

¹ By T. H. Holland, Geological Survey of India.

became tilted up and even overturned in the great foldings of the strata. This final rise of the Himālayan range in late Tertiary times was accompanied by the movements which gave rise also to the Arakan Yoma and the Nāgā hills on the east, and the hills of Baluchistān and Afghānistān on the west.

The rise of the Himālayan range may be regarded as a great buckle in the earth's crust, which raised the great Central Asian plateau in late Tertiary times, folding over in the Baikal region on the north against the solid mass of Siberia, and curling over as a great wave on the south against the firmly resisting mass of the Indian Peninsula.

As an index to the magnitude of this movement within the Tertiary era, we find the marine fossil foraminifer, *Nummulites*, which lived in eocene times in the ocean, now at elevations of 20,000 feet above sea-level in Zaskār. With the rise of the Himālayan belt, there occurred a depression at its southern foot, into which the alluvial material brought down from the hills has been dropped by the rivers. In miocene times, when presumably the Himālayas did not possess their present elevation, the rivers deposited fine sands and clays in this area; and as the elevatory process went on, these deposits became tilted up, while the rivers, attaining greater velocity with their increased gradient, brought down coarser material and formed conglomerates in pliocene times. These also became elevated and cut into by their own rivers, which are still working along their old courses, bringing down boulders to be deposited at the foot of the hills and carrying out the finer material farther over the Indo-Gangetic plain.

The
Siwālik
series.

The series of rocks which have thus been formed by the rivers, and afterwards raised to form the Sub-Himālayas, are known as the Siwālik series. They are divisible into three stages. In the lowest and oldest, distinguished as the Nāhan stage, the rocks are fine sandstones and red clays without any pebbles. In the middle stage, strings of pebbles are found with the sandstones, and these become more abundant towards the top, until we reach the conglomerates of the upper stage. Along the whole length of the Himālayas these Siwālik rocks are cut off from the older rock systems of the higher hills by a great reversed fault, which started in early Siwālik times and developed as the folding movements raised the mountains and involved in its rise the deposits formed along the foot of the range. The Siwālik strata never extended north of this great boundary fault, but the continued rise of the mountains affected

granite rock is probably dependent on the development of low-pressure areas during the process of folding, and there is thus a *prima facie* reason for supposing that much of the igneous material became injected during the Tertiary period. With the younger intrusions, however, there are probably remains of injections which occurred during the more ancient movements, and there may even be traces of the very ancient Archaean gneisses; for we know that pebbles of gneisses occur in the Cambrian conglomerates of the Tibetan zone, and these imply the existence of gneissose rocks exposed to the atmosphere in neighbouring highlands. The gneissose granite of the Central Himālayas must have consolidated under great pressure, with a thick superincumbent envelope of sedimentary strata; and their exposure to the atmosphere thus implies a long period of effectual erosion by weathering agents, which have cut down the softer sediments more easily and left the more resisting masses of crystalline rocks to form the highest peaks in the range. Excellent illustrations of the relationship of the gneissose granites to the rocks into which they have been intruded are displayed in the Dhaola Dhār in Kulū, in the Chor Peak in Garhwāl, and in the Darjeeling region east of Nepāl.

Fossiliferous
rocks of
the Tibe-
tan zone.

Beyond the snowy range in the Tibetan zone we have a remarkable display of fossiliferous rocks, which alone would have been enough to make the Himālayas famous in the geological world. The boundary between Tibetan territory and Spiti and Kumaun has been the area most exhaustively studied by the Geological Survey. The rocks exposed in this zone include deposits which range in age from Cambrian to Tertiary. The oldest fossiliferous system, distinguished as the Haimanta ('snow-covered') system, includes some 3,000 feet of the usual sedimentary types, with fragmentary fossils which indicate Cambrian and Silurian affinities. Above this system there are representatives of the Devonian and Carboniferous of Europe, followed by a conglomerate which marks a great stratigraphical break at the beginning of Permian times in Northern India. Above the conglomerate comes one of the most remarkably complete succession of sediments known, ranging from Permian, without a sign of disturbance in the process of sedimentation, throughout the whole Mesozoic epoch to the beginning of Tertiary times. The highly fossiliferous character of some of the formations in this great pile of strata, like the *Productus* shales and the Spiti shales, has made this area classic ground to the palaeontologist.

The great Eurasian sea distinguished by the name 'Thetys,'

which spread over this area throughout the Palaeozoic and Mesozoic times, became driven back by the physical revolution which began early in Tertiary times, when the folding movements gave rise to the modern Himālayas. As relics of this ocean have been discovered in Burma and China it will not be surprising to find, when the ground is more thoroughly explored, that highly fossiliferous rocks are preserved also in the Tibetan zone beyond the snowy ranges of Nepal and Sikkim.

Of the minerals of value, graphite has been recorded in the Kumaun Division; coal occurs frequently amongst the Nummulitic (eocene) rocks of the foot-hills and the Gondwana strata of Darjeeling District; bitumen has been found in small quantities in Kumaun; stibnite, a sulphide of antimony, occurs associated with ores of zinc and lead in well-defined lodes in Lāhul; gold is obtained in most of the rivers, and affords a small and precarious living for a few washers; copper occurs very widely disseminated and sometimes forms distinct lodes of value in the slaty series south of the snowy range, as in the Kulū, Kumaun, and Darjeeling areas; ferruginous schists sometimes rich in iron occur under similar geological conditions, as in Kāngra and Kumaun; sapphires of considerable value have been obtained in Zāskār and turquoises from the central highlands; salt is being mined in quantity from near the boundary of the Tertiary and older rocks in the State of Mandi; borax and salt are obtained from lakes beyond the Tibetan border; slate-quarrying is a flourishing industry along the southern slopes of the Dhaola Dhār in Kāngra District; mica of poor quality is extracted from the pegmatites of Kulū; and a few other minerals of little value, besides building-stones, are obtained in various places. A small trade is developed, too, by selling the fossils from the Spiti shales as sacred objects.

Economic
minerals.

The general features of the great variety in vegetation have been illustrated in the quotation from Mr. Freshfield's description of Sikkim. These variations are naturally due to an increase in elevation, and to the decrease in rainfall and humidity passing from south to north, and from east to west. The tropical zone of dense forest extends up to about 6,500 feet in the east, and 5,000 feet in the west. In the Eastern Himālayas orchids are numerically the predominant order of flowering plants; while in Kumaun about 62 species, both epiphytic and terrestrial, have been found. A temperate zone succeeds, ranging to about 12,000 feet, in which oaks, pines, and tree-rhododendrons are conspicuous, with chestnut, maple,

Botany.

pressed his religion by force on the people, and in the province of Kashmīr proper 94 per cent. of the total are now Muhammadans. Baltistān is also inhabited chiefly by Muhammadans, but the proportion is much less in Jammu, and beyond the Kashmīr State Islām has few followers. Hinduism becomes an important religion in Jammu, and is predominant in the southern portions of the Himālayas within the Punjab and the United Provinces. It is the religion of the ruling dynasty in Nepāl, where, however, Buddhism is of almost equal strength. East of Nepāl Hindus are few. Where Hinduism prevails, the language in common use, known as Pahārī, presents a strong likeness to the languages of Rājputāna, thus confirming the traditions of the higher classes that their ancestors migrated from the plains of India. In Nepāl the languages spoken are more varied, and Newārī, the ancient state language, is akin to Tibetan. The Mongolian element in the population is strongly marked in the east, but towards the west has been pushed back into the higher portion of the ranges. In Kumaun are found a few shy people living in the recesses of the jungles, and having little intercourse with their more civilized neighbours. Tribes which appear to be akin to these are found in Nepāl, but little is known about them. North of Assam the people are of Tibeto-Burman origin, and are styled, passing from west to east, the Akās, Daflās, Miris, and Abors, the last name signifying 'unknown savages.' Colonel Dalton has described these people in his *Ethnology of Bengal*.

Agriculture.

From the commercial point of view the agricultural products of the Himālayas, with few exceptions, are of little importance. The chief food-grains cultivated are, in the outer ranges, rice, wheat, barley, *maruā*, and amaranth. In the hot, moist valleys, chillies, turmeric, and ginger are grown. At higher levels potatoes have become an important crop in Kumaun; and, as already mentioned, in Kulū and Kumaun European fruits have been successfully naturalized, including apples, pears, cherries, and strawberries. Two crops are obtained in the lower hills; but cultivation is attended by enormous difficulties, owing to the necessity of terracing and clearing land of stones, while irrigation is only practicable by long channels winding along the hill-sides from the nearest suitable stream or spring. As the snowy ranges are approached wheat and buckwheat, grown during the summer months, are the principal crops, and only one harvest in the year can be obtained. Tea gardens were successfully established in Kumaun during the first half

of the nineteenth century, but the most important gardens are now situated in Kāngra and Darjeeling. In the latter District cinchona is grown for the manufacture of quinine and cinchona febrifuge.

The most valuable forests are found in the Outer Himālayas, yielding a number of timber trees, among which may be mentioned *sāl*, *shisham* (*Dalbergia Sissoo*), and *tūn* (*Cedrela Toona*). Higher up are found the *deodār* and various kinds of pine, which are also extracted wherever means of transport can be devised. In the Eastern Himālayas wild rubber is collected by the hill tribes already mentioned, and brought for sale to the Districts of the Assam Valley.

Communications within the hills are naturally difficult. Railways have hitherto been constructed only to three places in the outer hills: Jammu in the Kashmīr State, Simla in the Punjab, and Darjeeling in Bengal. Owing to the steepness of the hill-sides and the instability of the strata composing them, these lines have been costly to build and maintain. A more ambitious project is now being carried out to connect the Kashmīr Valley with the plains, motive power being supplied by electricity to be generated by the Jhelum river. The principal road practicable for wheeled traffic is also in Kashmīr, leading from Rāwālpindi in the plains through Murree and Bāramūla to Srinagar. Other cart-roads have been made connecting with the plains the hill stations of Dharmśāla, Simla, Chakrāta, Mussoorie, Dalhousie, Nainī Tāl, and Rānikhet. In the interior the roads are merely bridle paths. The great rivers flowing in deep gorges are crossed by suspension bridges made of the rudest materials. The sides consist of canes and twisted fibres, and the footway may be a single bamboo laid on horizontal canes supported by ropes attached to the sides. These frail constructions, oscillating from side to side under the tread of the traveller, are crossed with perfect confidence by the natives, even when bearing heavy loads. On the more frequented paths, such as the pilgrim road from Hardwār up the valley of the Ganges to the holy shrines of Badrināth and Kedārnāth, more substantial bridges have been constructed by Government, and the roads are regularly repaired. Sheep and, in the higher tracts, yaks and crosses between the yak and ordinary cattle are used as beasts of burden. The trade with Tibet is carried over lofty passes, the difficulties of which have not yet been ameliorated by engineers. Among these the following may be mentioned: the Kangwa La (15,500 feet) on the Hindustān-Tibet road through Simla; the Mānā

Means of
communi-
cation.

(United Provinces); two large affluents, the Giri from Sirmūr on the west and the Asan from Dehra on the east, join it here. The Jumna pierces the Siwāliks 95 miles from its source, at Khārā, and divides Ambāla and Karnāl Districts in the Punjab from Sahāranpur and Muzaffarnagar in the United Provinces. It is a large river at Faizābād, where it gives off the WESTERN and EASTERN JUMNA CANALS. Near Bidhauri in Muzaffarnagar it turns due south, and runs in that direction for 80 miles, dividing Meerut District from the Punjab, till it reaches Delhi. Ten miles below Delhi it gives off the AGRA CANAL from its western bank at Okhla. It then turns south-east for 27 miles to Dankaur, when it again resumes a southerly course. In this portion it receives on the east the Kotha Nadi and the HINDAN, and on the west the Sabi Nadi. Below Delhi the river forms the boundary between Gurgaon District in the Punjab and Bulandshahr and Aligarh Districts in the United Provinces. It then enters Muttra and, crossing it, turns east till the borders of Agra are reached. Throughout its course in this District, where it receives the BĀNGANGĀ, and also in Etāwah, it winds in a remarkable manner, its bed lying deep between high banks which are furrowed by steep ravines. Just before Jālaun District is reached the great river CHAMBAL from Rājputāna joins it, and the Jumna then divides the three Districts of Cawnpore, Fatehpur, and Allahābād from Jālaun, Hamirpur, and Bāndā. In Cawnpore District the Sengar, and in Fatehpur the Non and Rind, flow into it; close to Hamirpur it receives the BETWĀ, and in Bāndā District the KEN. It finally falls into the GANGES below Allahābād, 860 miles from its source.

The Jumna, after issuing from the hills, has a longer course in the United Provinces than the Ganges; but it is not so large or important a stream, and does not carry as much water as is required by the canals taken from it. The supply is therefore increased from the Ganges by means of the cut into the HINDAN; and the Irrigation Commission (1901) recently proposed to make more water from the Ganges available by increasing the supply of the Lower Ganges Canal through a cut from the SĀRDĀ. The Jumna supplies drinking-water to the cities of Agra and Allahābād, which possesses, when fresh, special virtue in destroying the enteric microbe. It is crossed by railway bridges near Sarsāwā in Sahāranpur, at Delhi, Muttra, Agra, Kālpi (2,626 feet in width), and Allahābād (3,230 feet). The breadth of water-surface in the dry season varies from 2,600 feet at Okhla and 1,500 feet at Kālpi to 2,200 feet at

Allahābād. The discharge in flood at Okhla is about 41,000 cubic feet per second, but this dwindles away to less than 200 in the dry season. The Jumna drains a total area of about 118,000 square miles.

The traffic on the Jumna was formerly of some importance, and large sums were spent in clearing away reefs of *bankar* (nodular limestone) and conglomerate in Etāwah District. Before the opening of the East Indian Railway, much cotton grown in Bundelkhand was sent down the river from Kālpi. At present timber is carried down the upper portion, and stone and grain in the lower courses. The principal towns on or near its bank are: Delhi in the Punjab; and Bāghpat, Māt, Brindāban, Muttra, Mahāban, Agra, Firozābād, Batesar, Etāwah, Kālpi, Hamīrpur, and Allahābād in the United Provinces.

Chautang.—River in the Ambāla and Karnāl Districts of the Punjab, rising in the plains a few miles south of the SARASWATĪ, to which it runs parallel for a distance. Near Bālchhapar the two rivers apparently unite in the sands, but reappear in two distinct channels farther down, the Chautang running parallel to the Jumna, and then turning westward towards Hānsi and Hissār. The bed in this part of its course affords a channel for the Hissār branch of the Western Jumna Canal. Traces of the deserted waterway are visible as far as the GHAGGAR, which it formerly joined some miles below Bhatnair, after a course of about 260 miles; but the stream is now entirely diverted into the canal. In former days it lost itself in the sand, like others of the smaller cis-Sutlej rivers. Some authorities consider that the Chautang was originally an artificial channel. Cultivation extends along its banks in a few isolated patches, but for the most part a fringe of dense jungle lines its course.

Saraswati.—River of the Punjab, rising in Sirmūr State close to the borders of Ambāla District. It debouches on the plains at Adh Badri, a place held sacred by all Hindus. A few miles farther on it disappears in the sand, but comes up again about three miles to the south at the village of Bhawānipur. At Bālchhapar it again vanishes for a short distance, but emerges once more and flows on in a south-westerly direction across Karnāl, until it joins the Ghaggar in Patīālā territory after a course of about 110 miles. A District canal takes off from it near Pehowa in Karnāl District. The word *Saraswati*, the feminine of *Saraswat*, is the Sanskrit form of the Zend *Haragaiti* (*Arachosia*) and means 'rich in lakes.' The name was probably given to the river by the Aryan invaders in

memory of the Haragaiti of Arachosia, the modern Helmand in Seistān.

Ghaggar.—A river of Northern India. It rises on the lower slopes of the Himālayas in the Native State of Sirmūr, in $30^{\circ} 4' N.$ and $77^{\circ} 14' E.$ Passing within three miles of Ambāla town and touching British territory, it traverses the Native State of Patiāla, where it receives the SARASWATĪ, enters Hissār District, and finally loses itself in Bikaner territory near Hanumāngarh, formerly called Bhatnair. The river was once an affluent of the Indus, the dry bed of the old channel being still traceable. It is not a perennial stream, but depends on the monsoon rainfall for its supply. At present every village through which the stream passes in its upper course diverts a portion of its waters for irrigation, and no less than 10,000 acres in Ambāla District alone are supplied from this source. The dams thus erected check the course of the stream, while the consequent deposit of silt, greatly facilitated by the dams, has permanently diminished the power of the water to force its way across the dead level of the Karnāl or Patiāla plains. Near Jakhāl station on the Southern Punjab Railway a District canal, the Rangoi, takes off from the main stream, and irrigates an average of 12,000 acres annually. The Bikaner Darbār constantly complained that the dams constructed in Hissār District prevented the water of the river from entering their territory; and in 1896 it was decided to construct a weir at the lower end of the Dhanūr lake at Otu, which supplies two canals, one on the north and the other on the south bank. The work was completed at a cost of 6 lakhs, of which the Bikaner State contributed nearly half. The two canals are nearly 95 miles in length ($51\frac{1}{2}$ miles in Bikaner and about $43\frac{1}{2}$ in British territory), and have more than 23 miles of distributaries. They form the most important irrigation works in the Bikaner State, and have supplied about 10,000 acres annually since 1897-8.

The Ghaggar water, in or near the hills, when used for drinking, produces disastrous results, causing fever, enlarged spleen, and goitre; families are indeed said to die out in the fourth generation, and the villages along its banks are greatly under-populated. Only the prospect of obtaining exceptional returns for their labours can induce cultivators to settle in such an unhealthy region. During the lower portion of its course in Hissār District the bed of the river is dry from November to June, and yields excellent crops of wheat and rice. Even in the rains the water-supply is very capricious, and from time

to time it fails entirely except in the immediate neighbourhood of the hills.

Sutlej (*Satlaj*; the *Zaradros* of Ptolemy and Arrian; the *Sutudri* or *Satadru* of the Vedas; 'flowing in a thousand channels').—One of the 'five rivers' of the Punjab from which the Province derives its name. Rising near the more westerly of the Mānasarowar Lakes in Tibet in $30^{\circ} 20'$ N. and $81^{\circ} 25'$ E., at a height of 15,200 feet, the Sutlej flows in a north-westerly direction along the southern slopes of the Kailās mountains to the Chinese frontier outpost at Shipki. Here its elevation is 10,000 feet above the sea. Thence turning south-west by south it enters the Kanāwār valley in Bashahr State, receiving the waters of the Li or river of Spiti near Dāhlang. Its course in Kanāwār is 80 miles. After leaving that valley it flows west-south-west through deep gorges in the hills, separating the Sarāj *tahsil* of Kulū and Mandi State on the north from the Simla Hill States on the south. In this reach lie Rāmpur, the capital of Bashahr, and Bilāspur town. Then winding through Bilāspur State the Sutlej enters the Jaswān Dūn in Hoshiārpur, and turning suddenly south-east, past the town of Anandpur-Mākhowāl in that District, pierces the Siwālīks at Rūpar, after a course of 160 miles from the western extremity of Kanāwār. In the hills, the Sutlej is crossed by bridges at Wangtu, Rāmpur, Lohri, and Seoni. At Rūpar it takes a sudden bend to the west, and debouching upon the plains divides the Jullundur Doāb from the Sirhind plateau. At the south-west corner of Kapūrthala State ($31^{\circ} 11'$ N. and $75^{\circ} 4'$ E.) the sluggish waters of the Bein and the broad stream of the Beās flow into the Sutlej. From this point the united stream preserves an almost uniform south-westerly course, dividing the Bāri Doāb to the north from the sandy plains of Ferozepore and Bahāwalpur to the south, until after receiving the Chenāb at Madwāla it joins the Indus at Mithankot in Muzaffargarh District. The total length of the river is 900 miles. In the plains it is fringed by a fertile lowland valley, confined on either side by high banks leading to the naturally barren table-lands that form the watersheds of the Rāvi to the north and the Jumna to the south. The lower valley of the Sutlej is less fertile, and closely resembles the deserts of Rājputāna. As soon as it enters the plains the river is robbed of half its waters by the SIRHIND CANAL, which takes off at Rūpar from the southern bank of the river, and irrigates large tracts in Ludhiāna and Ferozepore Districts and the adjacent Native States. Soon after the Beās joins the Sutlej, the UPPER

SUTLEJ system of inundation canals takes off from its northern bank to irrigate parts of Lahore and Montgomery Districts. Finally, the LOWER SUTLEJ CANALS draw off most of the remaining water to irrigate the rainless tracts of south-west Multān. The river is open to small craft all the year round, but there is little traffic above Ferozepore. It is bridged by the North-Western Railway at Phillaur, Kasūr, and Adam-wāhan in Bahāwalpur.

After it leaves the hills the river is never called Sutlej by the people, and it has changed its course more than once in historical times. The history of those changes can be traced with considerable probability and detail. In the time of Arrian, the Sutlej found an independent outlet into the Rann of Cutch. In the year A.D. 1000 it was a tributary of the Hakra, and flowed in the Eastern Nāra. Thence the former bed can be traced back through Bahāwalpur and Bikaner into the Sirsa *tahsil* of Hissār, until it is lost near Tohāna. From Tohāna to Rūpar this old bed cannot be traced; but it is known that the Sutlej took a southerly course at Rūpar, instead of turning west, as now, to join the Beās. Thus the Sutlej or the Hakra—for both streams flowed in the same bed—is probably the lost river of the Indian desert, whose waters made the sands of Bikaner and Sind a smiling garden. By 1245 the Sutlej had taken a more northerly course, the Hakra had dried up, and a great migration took place of the people of the desert—as it thus became—to the Indus valley. The course then taken by the Sutlej was apparently a continuation of the present course of the Ghaggar. About 1593 the Sutlej left the Ghaggar and went north once more. The Beās came south to meet it, and the two flowed in the same channel under various names—Machhu Wah, Hariāni, Dand, Nūrni, Nīli, and Gharah. Then the Sutlej once more returned to its old course and rejoined the Ghaggar. It was only in 1796 that the Sutlej again left the Ghaggar and finally joined the Beās.

Beās (*Hyphasis* of the Greeks; *Arjikhūja* of the Vedas; Sanskrit *Vipāsa*).—One of the 'five rivers' of the Punjab from which the Province derives its name. Rising on the southern face of the Rohtang pass in Kulū, 13,326 feet above the sea, the Beās traverses the State of Mandī and enters Kāngra District at Sanghol, 1,920 feet above sea-level. During the early part of its course the fall averages 125 feet per mile. A fine suspension bridge spans the river at Mandī town, and a bridge of boats is kept up during the cold season at Dera Gopipur in Kāngra District. During its lower hill course the Beās is

crossed by numerous ferries, at many of which the means of communication consists of inflated skins (*darais*). Lower down it meanders in a westerly course through hilly country, with a fall of 7 feet to the mile, and forms the main channel for the drainage of Kāngra. Near Reh in that District it divides into three channels, which reunite after passing Mirthal, 1,000 feet above sea-level. On meeting the Siwālik Hills in Hoshiārpur, the river sweeps sharply northward, forming the boundary between that District and Kāngra. Then bending round the base of the Siwāliks, it takes a southerly direction, separating the Districts of Hoshiārpur and Gurdāspur. In this portion of its course through the uplands of the Punjab plains, a strip of low alluvial soil fringes its banks, subject in floodtime to inundation from the central stream. The main channel is broad and ill-defined, full of islands and expanding from time to time into wide pools. The depth does not exceed 5 feet in the dry season, increasing to 15 feet during the rains. Broad flat-bottomed country boats navigate this portion of the stream throughout the year. No bridges span the Beās in the Districts of Hoshiārpur or Gurdāspur. After touching Jullundur District for a few miles, the river forms the boundary between Amritsar and the Kapūrthala State. At Beās station it is crossed by a railway bridge on the North-Western Railway; and a bridge of boats on the grand trunk road is also maintained there during the cold season. The channel shifts from year to year through the alluvial valley according to the action of the floods. Finally, the Beās joins the Sutlej at the south-western boundary of the Kapūrthala State, after a total course of 290 miles. It ranks sixth in size among the rivers of the Punjab.

The chief tributaries are the Chakki and the Bein. The Chakki collects the drainage of the Chamba hills and its main stream joins the Beās near Mirthāl, while the other branch, formerly a tributary of the Rāvi, has been turned aside by the Bāri Doāb Canal and forced to return to the Beās lower down. The Bein—called the 'Black' (*siyāh*) Bein to distinguish it from the 'White' (*safed*) Bein—rises in the Siwāliks, and joins the Beās 10 miles above its junction with the Sutlej.

The old course of the Beās can be traced from its present point of junction with the Sutlej through Lahore and Montgomery Districts to the place where it used to join the Chenāb, near Shujābād, before the Chenāb turned westwards. The united waters of the Jhelum, Chenāb, and Rāvi joined the Beās in those days 28 miles south of Multān. Since the end

of the eighteenth century the course of the Beās has changed but little.

Rāvi (the *Hydraotes* of Arrian, the *Parushni* of the Vedas, and the *Irāvati* of classical Sanskrit authors. The present name means 'sun').—One of the 'five rivers' of the Punjab from which the Province derives its name. Rising in the Kulū subdivision of Kāngra District, it immediately passes into the Chamba State, after which it re-enters British territory on the borders of Gurdāspur District, opposite Basoli in the Jammu district of Kashmir, forming the boundary of that State for 25 miles, with a general south-westerly course. It leaves the hills at Shāhpur, but still flows between high cliffs, while on the Jammu side the mountains rise from its very brink. At Mādhopur, the head-works of the Bāri Doāb Canal draw off a large portion of its waters. Thenceforward the banks sink in height, and the river assumes the usual character of the Punjab streams, flowing in the centre of an alluvial valley, with high outer banks at some distance from its present bed. In 1870 it carried away the Tāli Sāhib shrine near Dera Nānak, a place of great sanctity with the Sikhs, and still threatens that town. The Rāvi next passes between Siālkot and Amritsar Districts, preserving its general south-westerly direction. The depth here is not more than a foot in March and April, swelling in June and September to 18 or 20 feet. Entering the District of Lahore, it runs within a mile of Lahore city, and throws out several branches which soon, however, rejoin the parent stream. A railway and foot-bridge spans the river a few miles north of Lahore, and the grand trunk road crosses it by a bridge of boats. After entering Montgomery District it receives its chief tributary, the Degh, on its north-western bank. The Degh rises in Jammu and flows through Siālkot and Lahore Districts, bringing with it large deposits of silt and affording great facilities for irrigation by wells. The Rāvi then passes into Multān District, where it is again bridged by the North-Western Railway near Sidhnai, and finally falls into the Chenāb in $30^{\circ} 31' \text{ N.}$ and $71^{\circ} 51' \text{ E.}$, after a total course of about 450 miles.

Throughout its course in the plains, the Rāvi flows everywhere in a comparatively narrow valley, often only a couple of miles in width, with generally a very tortuous channel. In one part, however, the river runs a perfectly straight course for 12 miles from Kuchlumba to Sarai Sidhu in Multān District, between high wooded banks, forming a beautiful reach called the Sidhnai, where the SIDHNAI CANAL takes off. Few islands

are formed, but the bed shifts occasionally from place to place. The floods of the Rāvi fertilize only a fringe of one or two miles on either side, and it is little employed for direct irrigation, although it supplies water to the Bāri Doāb and Sidhnai Canals. Navigation is difficult, but grain is shipped from Lahore in considerable quantities. *Deodār* timber, floated down in rafts from the Chamba forests during the rains, only finds its way to Lahore in seasons of heavy flood. In 1397 the Rāvi still flowed east and south of Multān and united with the Beās, as it did in the time of Chach (A.D. 800). The change of course northwards has been comparatively slight, and its date is uncertain. Even now, at times of high flood, the water finds its way to Multān by the old channel.

Chenāb (the *Acesines* of the Greeks and *Asikni* of the Vedas).—River in Kashmīr and the Punjab, and one of the 'five rivers' from which the Punjab derives its name. It rises in the Himālayan canton of Lāhul in two streams: the Chandra, which issues from a large snow-bed on the south-east side of the Bāra Lācha at a height of 16,221 feet; and the Bhāga, which rises on the north-west slopes of the pass. The Chandra, after flowing south-east for 55 miles, sweeps round the base of the mid-Himālayas and joins the Bhāga at Tandi, after a total course of 115 miles. The course of the Bhāga to Tandi is only 65 miles, its average fall being 125 feet per mile. The united stream, now known as the Chandra-Bhāga or Chenāb, flows through the Pāngi valley in Chamba State and then enters the Padar district of Kashmīr at an elevation of 6,000 feet. Thence for 180 miles it flows between steep cliffs of the high mountains, and then for 25 miles through the lower hills to Akhnūr, where it becomes navigable. There are three remarkable bends in the Chenāb. Where it reaches Kishtwār from a north-west course it suddenly twists due south; at Jangalwār it tacks from south to west; and at Arnas it leaves its westerly course and flows due south past Riāsi to Akhnūr. At each of these turns the Chenāb is joined by a stream of considerable size, and at every change of course the river seems to cut through the mountain range along which it had been flowing.

The chief tributaries in its passage through Kishtwār, Bhadrawār, and Jammu are the Uniar and Shudī, and the Bhutna and Māru Wardwan rivers. Between Kishtwār and Akhnūr it receives the waters of the Golan Lar and Lidar Kol, and the Bichlari and Ans, and between Riāsi and the western boundary of Jammu it is joined by the Tāwi. There are

several bridges, two of which, on the routes from Jammu to Kashmir and from Kashmir to Kishtwār respectively, are of a superior description. The rest are of the primitive *jhūla* type—three ropes stretched across the stream in the form of a triangle.

The Chenāb re-enters the Punjab at Khairi Rihāl in Siālkot District. The Tāwi joins it almost at once, and the first place of importance in British territory is Wazirābād, where the Alexandra Bridge carries the North-Western Railway across the river. Throughout its course in the plains the river flows in a wide and shifting bed of sand. A few miles south-west of Wazirābād the main branch of the LOWER CHENĀB CANAL takes off at Khānki; and thence the river flows on greatly diminished in bulk, dividing the Chaj Doāb on the west from the Rechna Doāb on the east, until the Jhelum joins it in Jhang District at Trimmu. Thence the two rivers flow under the name of the Chenāb, till joined by the Rāvi near Sidhu and the Sutlej at Madwāla. The North-Western Railway crosses it again at Sher Shāh. Thence it flows on under the name of the PANJNAD, to join the Indus at Mithankot. Small boats can navigate the river in the plains all the year round, but there is little traffic above Chiniot.

There is evidence to show that the Chenāb flowed to the east of Multān as late as A.D. 1245. The Beās then occupied its old bed, passing Dipālpur; and the Jhelum, Chenāb, and the Rāvi met north-east of Multān, and flowing to the east of that city joined the Beās 28 miles south of it and east of Uch. Thus Multān and Uch were both in the Sind-Sāgar Doāb. By 1397 the Chenāb had altered its course westward and was flowing to the west of Multān, as it still does. The part of the river which divides the modern District of Gujrāt from Gujrānwāla was known to the Muhammadan historians as the Sūdhārā (SODHRA), from the town of that name on its left bank.

Bhimbar.—Torrent in Gujrāt District, Punjab. Rising in the second Himālayan range, it drains a considerable valley within the mountain region, passes round the Pabbi hills, runs due south for 25 miles, and fertilizes a low fringe of land upon its banks. Four miles north-west of Gujrāt town it loses itself in the surface of the country, moistening and enriching the surrounding plain; it collects again near the village of Hariāl-wāla, and runs north-west until it reaches the Jalālia nullah, a branch of the Chenāb. The Bhimbar is an unmanageable stream during the rains, but completely dry in the winter months, leaving its bed a broad waste of sand. It is

fordable at all points, except for some hours after heavy rains in the hills.

Jhelum (*Jehlām*).—River of Kashmīr and the Punjab, being the most westerly of the 'five rivers' from which the Punjab derives its name. It was known to the Muhammadan historians as the Bihat, Wihat, or Bihatah, corruptions of its Sanskrit name *Vitastā* (which Alexander's historians graecized into *Hydaspes*, but Ptolemy more correctly as *Bidaspes*), while its modern Kashmīri name is *Veth*. It may be said to have its source in a noble spring of deep-blue water which issues from the bottom of a high scarp of a mountain spur. The spring is known as Vernāg; and at Khānabal, 15 miles north, its waters join the streams of Adpat, Bring, and Sandran, and form the starting-point of navigation. The river is navigable without a single lock from Khānabal to Bāramūla, 102 miles. In its course to the Wular Lake, which may be regarded as a delta of the river, the fall is 165 feet in the first 30 miles and 55 feet in the next 24 miles. From the Wular Lake to Bāramūla the fall is very slight.

The Jhelum river has many tributaries. On its right bank it receives the Liddar or Lambodri, which comes down from the everlasting snows overhanging the head of the Liddar valley, and from the mountain lake of Tarsar. Below Srinagar at Shādīpur—the 'place of the marriage' of the two rivers—the Sind river joins the Jhelum, and beyond the Wular Lake the Pohru stream, which drains the Lolāb valley, merges in the great river. On the left bank the chief tributaries are the Vishav, Rembiara, Ramshi, Dudgangā, Suknāg, and Ferozepura. The Dudgangā joins the Jhelum at the lower end of Srinagar city.

Below Bāramūla (5,000 feet) the placid Jhelum leaves the fertile banks of the valley, and rushes headlong down a deep gorge between lofty mountains of the Kazināg range on the north and an extension of the Pīr Panjāl on the south to Kohāla, 2,000 feet. At Muzaffarābād the Kishangangā river joins the Jhelum on its right bank, while a few miles lower down, and on the same side, the Kunhār river, which drains the Hazāra country, adds no inconsiderable volume of water. Between Khānabal and Bāramūla there are many bridges, but between Bāramūla and Domel, where the Kishangangā joins the Jhelum, the bridges are scarce and primitive. Much of the internal commerce of Kashmīr depends on the Jhelum. An account of the various descriptions of boats used will be found in the article on SRINAGAR.

Below its junction with the Kishangangā the Jhelum forms the boundary between Kashmīr State and the British Districts of Hazāra and Rāwalpindī, flowing in a narrow rocky bed, shut in by mountains on either side. Numerous rapids here render navigation impossible, though large quantities of timber are floated down from Kashmīr. A handsome suspension bridge at Kohāla, in Rāwalpindī District, connects Kashmīr with British territory. Below Dangalli, 40 miles east of Rāwalpindī, the Jhelum becomes navigable. Passing into Jhelum District, it skirts the outlying spurs of the Salt Range, receiving the waters of the Kahan, and finally debouches upon the plains a little above the town of Jhelum, about 250 miles from its source. Below Jhelum inundation of the lowlands begins to be possible, and low sandy islands stud the wide bed of the stream. The Bunhā, in the rains a roaring torrent which sometimes spreads over a mile of country, joins the Jhelum at Dārāpur. After a south-westerly course of more than 100 miles, during which the river divides the District of Jhelum from Gujrāt and Shāhpur, it enters the latter District entirely, and trends thenceforth more directly southward. The width in this portion of its course averages 800 yards in flood, dwindling during the winter months to less than half that width. Sudden freshes occur after heavy rains, and cause frequent inundations over the lowlands, greatly increasing the productive power of the soil. The Jhelum next enters the District of Jhang, where it preserves the same general characteristics, but with a wider valley, bounded by the high uplands known as the Bār. It finally joins the Chenāb at Trimmu, in $31^{\circ} 11' N.$ and $72^{\circ} 12' E.$, 10 miles to the south of Maghiāna, after a total course of not less than 450 miles, of which about 200 lie within British territory. The current in the plains has an average rate of 4 miles per hour. The wedge of land between the Jhelum and the Chenāb is known as the Chaj Doāb; while the tract stretching westward to the Indus bears the name of the Sind-Sāgar Doāb.

The principal towns upon the Jhelum are Kashmīr or Srīnagar, Jhelum, Pind Dādan Khān, Miāni, Bhera, and Khushāb. According to General Cunningham, the point where Alexander crossed the Hydaspes may be identified with Jalālpur in Jhelum District; while nearly opposite, on the Gujrāt bank, stands the modern battle-field of Chiliānwāla. Other writers hold that the passage was effected near Jhelum town. A bridge of boats crosses the river at Khushāb. The permanent railway bridge of the North-Western Railway also crosses it at the

town of Jhelum, and the Sind-Sāgar line at Haranpur. The LOWER JHELM CANAL takes off at Mong Rasūl in Gujrāt District.

Panjnād.—River in the Punjab, formed by the united waters of the SUTLEJ, BEĀS, RĀVI, CHENĀB, and JHELM. Its length is 44 miles to the junction with the Indus.

Indus (Sanskrit, *Sindhu*; Greek, *Sinthos*; Latin, *Sindus*).—The great river of North-Western India. The Indus rises in Tibet, and then flows through Kashmīr, the Frontier Province, and the Punjab, and after a final course through Sind falls into the Arabian Sea in $23^{\circ} 58' \text{ N.}$ and $67^{\circ} 30' \text{ E.}$ The drainage basin of the Indus is estimated at 372,700 square miles, and its total length at a little over 1,800 miles. The towns of importance on or near its banks in British territory are, beginning from the south: Karāchi, Kotri, Hyderābād, Schwān, Sukkur, Rohri, Mithankot, Dera Ghāzi Khān, Dera Ismail Khān, Miānwāli, Kālābāgh, Khushālgarh, and Attock.

The first section of the course of the Indus lies outside British territory, and must be briefly dealt with here. The river rises, as above stated, in Tibet (32° N. and 81° E.) behind the great mountain wall of the Himālayas, which forms the northern boundary of India, and is said to spring from the north side of the sacred Kailās mountain (22,000 feet), the Elysium of ancient Sanskrit literature. Issuing from the ring of lofty mountains about Lake Mānasarowar, whence also the Sutlej, the Brahmaputra, and the Kauriālā spring, it flows north-west for about 160 miles under the name of Singh-ka-bāb, until it receives the Ghar river on its south-western bank. A short distance below the junction of the Ghar, the Indus, which is supposed to have an elevation of 17,000 feet at its source, enters the south-eastern corner of Kashmīr at an elevation of 13,800 feet, flowing slowly over a long flat of alluvium. Following a steady north-by-west course it skirts Leh at a height of 10,500 feet and drops to 8,000 feet in Baltistān, just before it receives the waters of the Shyok river. At Leh it is joined by the Zāskār river, and is crossed by the great trade route into Central Asia via the Karakoram Pass. Early travellers like Dr. Thomson and Mr. Blane have described this portion of the Indus. The former found numerous hot springs, some of them with a temperature of 174° and exhaling a sulphurous gas. Still flowing north, but more westerly, through Kashmīr territory, it passes near Skārdū in Baltistān, and reaches the Haramosh mountain (24,300 feet) in about $34^{\circ} 50' \text{ N.}$ and $74^{\circ} 30' \text{ E.}$ Here it takes a turn southwards

Course in
Tibet and
Kashmīr.

Kashmīr.

at an acute angle, and passing beneath the Hattu Pīr, at an elevation of 4,000 feet, enters Kohistān in the Dīr, Swāt, and Chitrāl Agency near Gur. The steepness of its fall varies, now becoming greater, now less. This inequality of slope has been connected with the changes that occurred in the glacial period from the damming of the river by huge glaciers and the formation of great thicknesses of lacustrine deposit. The Indus has been the cause of serious and disastrous floods; the rapid stream dashes down gorges and wild mountain valleys; and in its lower and more level course it is swept by terrific blasts. Even in summer, when it is said to dwindle down to a fordable depth during the night, it may during the course of the day swell into an impassable torrent from the melting of the snows on the adjoining heights. Opposite Skārdū in Baltistān it is, even in the depth of winter, a grand stream, often more than 500 feet wide and 9 or 10 feet in depth. After leaving Gur, it flows for about 120 miles south-west through the wilds of Kohistān, until it enters the North-West Frontier Province ($35^{\circ} 25' \text{ N.}$ and $73^{\circ} 51' \text{ E.}$), near Darband, at the western base of the Mahābān mountain. The only point to which special allusion can be made in the long section of its course beyond British territory is the wonderful gorge by which the river bursts through the western ranges of the Hīmālayas. This gorge is near Skārdū, and is said to be 14,000 feet in sheer descent.

In the
Punjab
and the
Frontier
Province.

The Indus, on entering the Hazāra District of the North-West Frontier Province, 812 miles from its source, is about 100 yards wide in August, navigable by rafts, but of no great depth, and studded with sandbanks and islands. It is fordable in many places during the cold season; but floods or freshes are sudden, and Ranjīt Singh is said to have lost a force, variously stated at from 1,200 to 7,000 horsemen, in crossing the river. Even the large and solid ferry-boats which ply upon it are sometimes swept away. Almost opposite Attock it receives the Kābul river, which brings down the waters of Afghānistān. The two rivers have about an equal volume; both are very swift, and broken up with rocks. Their junction during floods is the scene of a wild confusion of waters. The Kābul river is navigable for about 40 miles above the confluence, but a rapid just above it renders the Indus impracticable. Attock, the limit of the upward navigation of the Indus, forms the first important point on the river within British territory. By this time it has flowed upwards of 860 miles, or nearly one-half of its total length, its further course to the sea being about

940 miles. It has fallen from an elevation of 17,000 feet at its source in Tibet to about 2,000 feet, the height of Attock being 2,079 feet. In the hot season, opposite the fort, its velocity is 13 miles an hour; and in the cold season, 5 to 7 miles. The rise of ordinary floods is from 5 to 7 feet in twenty-four hours, and the maximum is 50 feet above cold-season level. Its width varies greatly with the season—at one time being more than 250 yards, at another less than 100. The Indus is crossed at Attock by the railway bridge opened in 1883, a bridge of boats, and a ferry. The main trunk road to Peshāwar also crosses the river by a subway on the railway bridge.

After leaving Attock, the Indus flows almost due south, forming the western boundary of the Punjab, parallel to the Sulaimān Hills. The great north road from Bannu to Sind runs for several hundred miles parallel with its western bank; and from Attock to Mahmūd Kot the Māri-Attock, Māri, and Sind-Sāgar branches of the North-Western Railway run along its eastern bank. Twelve miles below Attock the Indus receives the waters of the Haroh, a rapid stream which, rising in the Murree hills as the Dhānd, meets the Karrāl coming down from the Mochpuri peak, and rushes through steep banks for a total course of 90 miles. At Makhad, the Sohān brings in all the drainage of Rāwalpindi and Jhelum Districts that is not taken by the Jhelum river. The Indus forms the eastern border of the two frontier Districts of Dera Ismail Khān in the North-West Frontier Province and Dera Ghāzi Khān in the Punjab with the Sind-Sāgar Doab on its eastern bank, and only a narrow strip of British territory between it and the hill tribes of the Sulaimān ranges on the west. Just above Mithankot, in the south of Dera Ghāzi Khān District, it receives the accumulated waters of the Punjab. Between the Indus and the Jumna flow the five great streams from which the Punjab (Panj-āb, literally 'The five waters') takes its name. These are the JHELUM, the CHENĀB, the RĀVI, the BEĀS, and the SUTLEJ. After various junctions these unite to form the river PANJNAD, literally 'The five streams,' which marks for a short space the boundary between British territory and the Bahāwalpur State, and unites with the Indus near Mithankot, about 490 miles from the sea. In the cold season the breadth of the Indus above the confluence is about 600 yards, its velocity 5 miles an hour, its depth from 12 to 15 feet, and its estimated discharge 10,000 to 25,000 cubic feet per second. During flood-times the breadth sometimes increases to 5 miles, and the

away. The rapidity and extent of the destructive action in constant progress in the delta may be estimated from the fact that travellers have counted by the reports as many as thirteen bank slips in a minute. In some places the elephant grass (*Typha elephantina*) does good service by driving its roots very deeply (often 9 feet) into the ground, and thereby holding it together.

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Inunda-
tions and
irrigation.

The entire course of the Indus in British territory, from Attock to the sea, lies within the zone of deficient rainfall, the annual average being nowhere higher than 10 inches. Cultivation, therefore, is absolutely dependent upon artificial irrigation, almost to as great an extent as in the typical example of Egypt. But the Indus is a less manageable river than the Nile. Its main channel is constantly shifting; at only three places—Sukkur, Jerruck, and Kotri—are the river banks permanent; and during the season of flood the melted snows of the Himālayas come down in an impetuous torrent which no embankment can restrain. From time immemorial this annual inundation, which is to Sind what the monsoons are to other parts of India, has been utilized as far as possible by an industrious peasantry, who lead the water over their fields by countless artificial channels. Many such channels, constructed in the days of native rule, extend 30 and even 40 miles from the river bank. Recently the systematic schemes of British engineers have added numerous perennial canals, such as the Jāmrao, constructed on scientific principles. The first recorded inundation of the Indus took place in 1833; another occurred in 1841 on a much larger scale. This flood was said to have been caused by the bursting of a glacier which formed over an accumulation of water in the Nubra Tso, into which there was a regular and steady flow from the surrounding hills. Eventually, the glacier was burst asunder by the pressure, and the released floods poured down the Shyok valley, carrying everything before them. There was another great flood in August, 1858, when the river rose 90 feet in a few hours, and the greater part of the private property in Naushahra cantonment was destroyed. Lower down in its course considerable damage has been caused in DERA GHĀZI KHĀN DISTRICT, where protective works were undertaken. Of recent years the Indus has been embanked from above Kashmor to the mouth of the Begāri canal, a distance of more than 50 miles. The embankment has proved a great protection to the North-Western Railway, which here runs at right angles to the river.

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Principal
canals.

A full account of irrigation in SIND will be found in the

article on that Province. It must suffice in this place to give a list of the principal works, following the Indus downwards from the Punjab. The country has recently been surveyed with a view to a canal being led from Kālābāgh down the Sind-Sāgar Doāb, but the difficulties in the way are at present considerable. The waters of the river are first utilized on a large scale in the INDUS INUNDATION CANALS, which water a narrow strip between the Indus and the Sulaimān mountains. The canals in this tract have an aggregate length of 690 miles, of which 108 have been constructed under British rule. In Muzaffargarh District the MUZAFFARGARH CANALS take off from the Indus and Chenāb, and in the Native State of Bahāwalpur the Chenāb and Sutlej, as well as the Indus, contribute to render cultivation possible. In Sind the following are the chief canal systems:—on the right or west bank, the Desert, Unar Wah, Begāri, Sukkur, Ghar, and Western Nāra; on the left or east, the Nāra Supply Channel, Mahi Wah, JĀMRAO, a branch of the Eastern Nāra, and the EASTERN NĀRA with many distributaries, the principal being the Mithrao and Pinjāri. Other important canals are the Fuleli with two mouths, the Nasrat, and the Dād. The total area irrigated by canals from the Indus in 1903-4 was:—in the Punjab, 714 square miles; in Sind, 4,925 square miles.

As a channel of navigation, the Indus has disappointed the expectations that were at one time formed. Before British arms had conquered Sind and the Punjab, it was hoped that the fabled wealth of Central Asia might be brought by this course down to the sea. But, even so far as local traffic is concerned, experience has proved in this case, as with most other Indian rivers, that the cheapness of water communication cannot compete with the superior speed and certainty of railways. Since the opening of the Indus Valley State Railway (now included in the North-Western system) in the autumn of 1878, navigation on the Indus, whether by steamer or by native boat, has greatly fallen off. The general character of the Indus trade may be inferred from the statistics of imports and exports into the PUNJAB by 'rail and river,' which refer only to traffic borne in part or wholly on the Indus. The original 'Indus Flotilla,' which was broken up in 1862, placed its first steamer on the river in 1835. In 1859 a company established another Indus flotilla in connexion with the Sind Railway, with which it was formally amalgamated in 1870, the joint head-quarters being removed to Lahore. The railway flotilla was abolished in 1882-3. These were not the only flota-
tion.

experiments on the Indus. In 1856 the Oriental Inland Steam Company obtained a yearly subsidy of Rs. 50,000 from Government; but, as the current proved too powerful for its steamers, the company stopped the traffic, and eventually collapsed.

For the conservancy of the lower part of the river, Act I of 1863 (Bombay) provides for the registration of vessels, and the levy of pilotage fees by an officer called the Conservator and Registrar of the Indus, the sum realized being expended on the improvement of navigation¹. A special export board, known as the Indus Commission, was constituted in 1901.

The boats of the Indus are the *dundo* and *zaurak*, both cargo-boats, the *kauntal*, or ferry-boats, and the *dundi*, or fishing-boats. The cargo-boats are sometimes of 60 tons burden, and when laden draw 4 feet of water. The state barges or *jhamptis* of the Sind Mlrs were built of teak, four-masted, and sometimes required crews of thirty men.

Fish.

Fish abound. At the mouths, the salt-water varieties include the *Clupea neorhii*, a species of herring largely consumed along the coast and in the delta. The chief of the fresh-water varieties are the *palla*, placed by Dr. Day under the *Clupeidae*, and nearly allied to, if not identical with, the *hilsa* of the Ganges; and the *damohro*. The local consumption and also the export of dried *palla* are very large. Otters, turtles, porpoises, water-snakes, and crocodiles of both species are numerous.

[*Notes on the Indus River* (Karāchi, 1901).]

Jumna Canal, Western.—An important perennial irrigation work in the Punjab, taking off from the west bank of the river Jumna, and irrigating Ambāla, Karnāl, Hissār, Rohtak, and Delhi Districts, and parts of the Native States of Patialā and Jind. It is by far the oldest of the great canals in the Province, and originated in 1356, when Fīroz Shāh III utilized the torrent-bed now known as the Chautang to conduct water to the royal gardens at Hissār and Hānsi. This was little more than a monsoon supply-channel, and after about a hundred years water ceased to flow farther than the lands of Kaithal. In 1568 the emperor Akbar re-excavated the work of Fīroz Shāh and brought a supply from the Jumna and the Somb into the Chautang, and so on to Hānsi and Hissār. This was undoubtedly a perennial canal, as is testified by the ancient bridges at Karnāl and Safidon, and the complete set of water-courses with which the canal was provided, besides the original *sanad* or working-plan of the canal which is still in existence.

¹ The Indus Conservancy department and fees levied for its up-keep were abolished in March, 1906.

respectively 1,300 and 6,380 cubic feet per second. The Western Jumna Canal has thus a maximum discharge more than three times that of the average flow of the Thames at Teddington. For the first 14 miles of its course the canal runs almost entirely in the old west branch of the Jumna river. It then effects a junction with the Somb river, a masonry dam across which holds up the combined streams and forces them into the canal head at Dādūpur, which is provided with a regulator and a rapid a short distance below. After a farther course of about 38 miles, chiefly in natural channels, there is at Indri a regulator with a lock and escape head, where the canal divides into the Sirsa branch and the new main line. The Sirsa branch has a capacity of 2,000 cubic feet per second, and runs for 115 miles, watering the arid tract of country between Indri and Sirsa. Some 31 miles farther on, the main line bifurcates into the Hānsi and new Delhi branches. The Hānsi branch has a length of 47 miles and a discharge of nearly 2,000 cubic feet a second, and gives off the Būtāna branch with a capacity of 700 cubic feet a second. The new Delhi branch has a capacity of 1,750 cubic feet a second and a length of 74 miles to the point where it meets the Okhla navigation canal at Delhi. The total length of main canal and branches is 343 miles, of distributaries (major and minor) 1,797 miles, of drainage cuts 657 miles, of escapes 76 miles, and of mill channels 9 miles. The total area commanded by the canal is 4,000 square miles, of which 3,300 square miles are cultivable. The average area of crops irrigated during the twenty years ending 1894-5 was 529 square miles, which rose in the four years ending 1903-4 to an average of 944 square miles; and the work is estimated to irrigate altogether 1,259 square miles. The capital outlay to the end of March, 1904 (excluding a contribution of $11\frac{1}{2}$ lakhs from the Patiala State), was 172.7 lakhs. The gross revenue for the three years ending March, 1904, averaged 23 lakhs, and the net revenue, after paying all interest charges and working expenses, 7.6 lakhs, or 4.4 per cent. on the capital outlay. The main line and the new Delhi branch are navigable from the head-works to Delhi. The Hānsi branch is navigable to where it meets the Southern Punjab Railway at Hānsi. The expenditure on the provision for navigation is estimated at 16 lakhs; and, although near Delhi there is a certain amount of boat traffic, and timber is largely rafted down the canal, this large expenditure has proved hitherto a financial loss, and the combination of navigation with irrigation a failure. There are flour-mills at

village of Mādhopur in Gurdāspur District, where the river is crossed by a weir 2,700 feet long. The canal is capable of carrying 6,500 cubic feet per second: the highest average supply in the hot season is 4,850, while in the cold season it varies from 1,270 to 2,170 cubic feet per second. The main line terminates at its 31st mile, there separating into the Kasūr and main branches. The Kasūr branch 7 miles lower down gives off the Sobraon branch, and the main branch after 25 miles gives off the Lahore branch, the four branches following the crests of the ridges into which the tract is divided by its natural drainage. The total length of the main and branch canals is 369 miles, and there are 1,591 miles of distributaries, from which water is brought upon the fields by means of water-courses constructed and maintained by the cultivators. The canal is not navigable. The rainfall is greatest in the upper part of the system, which has necessitated a special system of irrigation in Gurdāspur District and in the portion of Amritsar District north of the North-Western Railway on the Kasūr and Sobraon branches. In that tract the distributaries are closed during the cold season after a watering has been given for sowing the spring crops, the winter rains with some help from wells being sufficient to mature those crops. The water thus set free has been utilized in extending irrigation in the driest part of Lahore District, where it borders on Montgomery—a tract for which it would otherwise have been impossible to provide a perennial supply. The gross area commanded by the canal is 2,710 square miles in Gurdāspur, Amritsar, and Lahore Districts. The lower portion of the Doāb in Montgomery and Multān is not irrigated, as there is not sufficient water available in the Rāvi during the winter. The area irrigated was 297 square miles in 1860, 677 square miles in 1880-1, 1,346 square miles in 1900-1, and 1,464 square miles in 1903-4. The total capital expenditure (exclusive of interest) up to the end of 1903-4 was 197 lakhs. The gross income for that year was about 33 lakhs, or, inclusive of the increase of land revenue due to irrigation (which is credited to the canal in the accounts), 36 lakhs. The working expenses amounted to 11 lakhs, leaving a net profit of 25 lakhs, or 12.68 per cent. on the capital outlay.

Chenāb Canal, Lower.—A perennial canal in the Punjab, taking off from the left bank of the Chenāb river and watering the tract between it and the Rāvi. The greater part of this area was before the introduction of irrigation a desolate region, unpeopled except for a race of pastoral nomads known as

Janglis. The land was for the most part Government waste, and was thus adapted for colonization on a scale hitherto untried in the history of India, if not of the world. The original work was designed as a small inundation canal and opened as such in 1887, but in 1889 it was decided to convert it into a perennial canal of the first magnitude. The head-works of the canal are at Khānki, a village in Gujrānwāla District, 8 miles below Wazirābād. Here there is a weir across the river, by which the supply to the canal is regulated and controlled. The main line of the canal has a bed-width of 250 feet, and has been run with a depth of about 11 feet and a discharge of 11,000 cubic feet per second, or about six times the ordinary flow of the Thames at Teddington. This weir was commenced in 1890 and completed in 1892. The largest branch of the canal, the Gugera, carrying about one-half of the total supply, takes off from the left bank of the main line at the 28th mile. It has a length of 55 miles and then bifurcates into two subsidiary branches, the Gugera Lower and the Buralla, with lengths of 77 and 46 miles respectively. On the right bank, not far from the same off-take, is the Kot Nikka branch with a length of 18 miles. The extreme length of the main line is 40 miles, and it then divides into the Jhang, Rakh, and Miān Alf branches. The Jhang is the second largest branch of the system, and carries about 3,000 cubic feet per second. Its length is about 62 miles, before it bifurcates into the Jhang Lower (38 miles) and the Bhowāna (7½ miles long). The lengths of the Rakh and Miān Alf are 55 and 27 miles respectively. The total length of the main channels is 426 miles. For the distribution of the water-supply from the branches to the watercourses which directly irrigate the land there were, at the end of 1903-4, 2,323 miles of distributaries; and for the villages colonized by Government there had been constructed about 11,000 miles of watercourses. The total area commanded by the canal at the end of 1903-4 was 5,255 square miles in Gujrānwāla, Lahore, Jhang, and Montgomery Districts, of which 3,098 square miles were irrigated, an area which is capable of substantial increase. The total area of Government waste in the Doāb is about 3,817 square miles, of which 2,827 square miles of land commanded by the canal had been allotted by the end of 1903-4. The grantees are divided into three classes—capitalists, yeomen, and peasants; the greater part of the land has been distributed to peasants, who are by far the most satisfactory tenants. For the purpose of allotment the whole of

the eastern of the two large branches into which the main line bifurcates, runs to the town of Patiāla, having a bed-width of 75 feet, and a capacity of 3,000 cubic feet per second. On its way it gives off to the south the three Native State branches, the Kotla (94 miles long), the Ghaggar (54 miles), and the Choa (25 miles). These three branches irrigate almost exclusively native territory, and the distributaries and irrigation arrangements are under the Native States, who receive the whole of the canal revenue; but the Patiāla feeder and the branches are maintained by an officer of the Canal department as agent for the States, who distributes the water according to a fixed allotment, Patiāla taking 83 per cent., Nābha 9 per cent., and Jind 8 per cent.

The distributaries were constructed so as to penetrate the border of every irrigated village, and thus to save the people the expense of making long watercourses and the difficulty of taking them through the land of other villages. This system, though expensive to construct and maintain, has been repaid by the rapidity with which irrigation has spread over the country. As during the cold season the whole of the river supply is turned into the canal, it was necessary to provide a substitute on the canal for the river navigation thus closed. Accordingly the main line, the combined branch, and 48 miles of the Abohar branch were provided with locks at the falls; and from the 48th mile of the Abohar branch a special navigation canal to the Sutlej near Ferozepore, 47 miles long, was constructed with a branch 4 miles long to Ferozepore. The Patiāla feeder was also made navigable as far as Patiāla. There is, however, little navigation along the branches, though the main line from Rūpar to the North-Western Railway is much used, and brings down a considerable amount of timber from the hills. There are 25 flour-mills at different falls along the branches. The greater part of the main line and branches is bordered by rows of trees, and the strip of land reserved for spoil or borrow pits is generally covered with plantations. A telegraph line extends from the canal head down the main line, the two British branches, the Patiāla feeder, and part of the two longer Native State branches. Since 1896-7 the area irrigated has in only one year fallen below 1,560 square miles: the greatest area irrigated was 2,142 square miles in 1899-1900, of which 1,452 were in British territory. The total cost of construction to the end of 1903-4 has been 388.7 lakhs, of which 247.7 lakhs was paid by the Government, and 141 lakhs by the three Phūlkian States. Of the cost of the head-works and main

village of Mādhopur in Gurdāspur District, where the river is crossed by a weir 2,700 feet long. The canal is capable of carrying 6,500 cubic feet per second: the highest average supply in the hot season is 4,850, while in the cold season it varies from 1,270 to 2,170 cubic feet per second. The main line terminates at its 31st mile, there separating into the Kasūr and main branches. The Kasūr branch 7 miles lower down gives off the Sobraon branch, and the main branch after 25 miles gives off the Lahore branch, the four branches following the crests of the ridges into which the tract is divided by its natural drainage. The total length of the main and branch canals is 369 miles, and there are 1,591 miles of distributaries, from which water is brought upon the fields by means of water-courses constructed and maintained by the cultivators. The canal is not navigable. The rainfall is greatest in the upper part of the system, which has necessitated a special system of irrigation in Gurdāspur District and in the portion of Amritsar District north of the North-Western Railway on the Kasūr and Sobraon branches. In that tract the distributaries are closed during the cold season after a watering has been given for sowing the spring crops, the winter rains with some help from wells being sufficient to mature those crops. The water thus set free has been utilized in extending irrigation in the driest part of Lahore District, where it borders on Montgomery—a tract for which it would otherwise have been impossible to provide a perennial supply. The gross area commanded by the canal is 2,710 square miles in Gurdāspur, Amritsar, and Lahore Districts. The lower portion of the Doāb in Montgomery and Multān is not irrigated, as there is not sufficient water available in the Rāvi during the winter. The area irrigated was 297 square miles in 1860, 677 square miles in 1880-1, 1,346 square miles in 1900-1, and 1,464 square miles in 1903-4. The total capital expenditure (exclusive of interest) up to the end of 1903-4 was 197 lakhs. The gross income for that year was about 33 lakhs, or, inclusive of the increase of land revenue due to irrigation (which is credited to the canal in the accounts), 36 lakhs. The working expenses amounted to 11 lakhs, leaving a net profit of 25 lakhs, or 12.68 per cent. on the capital outlay.

Chenāb Canal, Lower.—A perennial canal in the Punjab, taking off from the left bank of the Chenāb river and watering the tract between it and the Rāvi. The greater part of this area was before the introduction of irrigation a desolate region, unpeopled except for a race of pastoral nomads known as

the Government waste has been divided into squares, the side of each square being 1,100 feet and the area about 28 acres. A peasant's grant consists of from one-half to three squares, a yeoman's of four or five, and a capitalist's of any number from five to twenty or more; and each settler is practically guaranteed water for the annual irrigation of a certain percentage of his holding. The Government retains the proprietary rights in the land, and the colonists are its tenants, the peasants for a term of years, the yeomen with right of continued occupancy so long as they pay their assessment, while the capitalists have also the right to purchase proprietary rights in their tenancy after the lapse of a certain period. There are also tenures which carry the liability to provide a certain number of camels for military service. For the purpose of distributing the land and of settling the colonists in villages, a special Colonization officer has been appointed with head-quarters at Lyallpur. There were 1,423 villages in 1903-4, the average size being about 50 squares or 1,400 acres. The population of the colony at the Census of 1901 was 782,690, and may ultimately reach two and a half millions. A railway for the transport of produce has been constructed, running the whole length of the Doāb from Wazirābād to Khānewāl, and several feeder-lines are under consideration. The capital cost of the canal up to the end of 1903-4 was about 280 lakhs. The canal earned a large revenue even while under construction, while the profits in 1903-4 amounted to 24 per cent. on the capital invested. The gross and net revenue derived therefrom in that year amounted to about 84 and 66 lakhs respectively. By 1913 the net revenue is likely to be very considerably increased, and the interest on the capital invested may amount to 30 per cent., while the value of the crops raised in a year is estimated to rise to 650 lakhs. The canal has thus not only enormously relieved the pressure of population in the congested Districts of the Punjab, but has proved a most remunerative investment, besides adding largely to the general wealth of the country. An extensive telegraph system runs from the head of the canal down its main line and branches, and along some of its larger distributaries, thus facilitating rapid regulation of supply.

Jhelum Canal, Lower.—A perennial irrigation work in the Punjab now approaching completion. It takes off from the left bank of the Jhelum, and will eventually supply perennial irrigation to the whole of the country lying between the Jhelum and Chenāb rivers, west of a line joining the town

of Miāni on the Jhelum with Pindi Bhattiān on the Chenāb. The head of the canal is near the village of Mong Rasūl in Gujrāt District. The river is dammed by a weir 4,100 feet long, and a regulator across the head of the canal takes the form of a bridge of 8 spans of $24\frac{1}{2}$ feet each. The main line has a bed-width of 140 feet and will have when running full a depth of 7.5 feet, and a discharge of 3,800 cubic feet per second, or twice the flow of the Thames at Teddington. The Shāhpur branch will take off at about the 28th mile of the main line. This branch has been designed to take up the irrigation now performed in Shāhpur District by the existing Imperial, Provincial, and privately owned inundation canals. After a course of 39 miles, in which it gradually approaches the centre of the highlands of the Doāb, the canal bifurcates into two main branches, watering the northern and southern portions of the Doāb respectively. The total length of the main line and main branches is about 167 miles, and about 960 miles of distributing channels will be constructed. The canal will protect an area of 2,400 square miles, and is expected to irrigate annually about 1,200 square miles. Of 2,400 square miles protected, about 850 are Government waste, which it is intended to turn into an immense horse-breeding colony for the supply of remounts to the Indian army. For this purpose the greater portion has been leased out to colonists on the condition of their keeping an approved brood mare, and other areas have been reserved for public and private breeding establishments and horse runs. The work of colonization is under an officer of the Indian Civil Service, who has his head-quarters at Sargodha in Shāhpur District. The land has been divided into squares of nearly 28 acres each, and one brood mare has to be maintained for every $2\frac{1}{2}$ squares. A railway has been constructed from Malakwāl on the Sind-Sāgar line to Shorkot on the Lyallpur-Khānewāl line, affording facilities for the immigration of colonists and the export of produce.

Elaborate precautions have been taken to prevent water-logging of the soil by over-irrigation. The depth at which spring-water is found below the surface of the ground has been carefully observed over the whole of the commanded area, and the country has been divided into three zones according to these depths. Where the spring-level is 40 feet or more below the surface, 50 per cent. of the gross area commanded may be irrigated; where the depth lies between 25 and 40 feet, 40 per cent. of the area will be irrigated; and where the water is nearer to the surface than 25 feet, only 25 per cent. will be

CANAL, most of these inundation canals will cease to exist as such when the Shāhpur branch of the Lower Jhelum Canal is constructed.

Sutlej Canals, Upper.—An Imperial system of four inundation canals in the Punjab, known as the Katora, Khānwah, Upper Sohāg, and Lower Sohāg (or Lower Sohāg and Pāra) Canals. They take off from the right bank of the river Sutlej, and irrigate the low-lying land bounded on the north by the old dry bed of the Beās, which separates it from the tracts commanded by the Bāri Doāb Canal. The tract commanded by the Katora Canal lies in Lahore District, and the remainder in Montgomery.

The canals existing at the end of 1903-4 aggregated 325 miles in length with 394 miles of distributaries, and carried an aggregate supply of 4,935 cubic feet per second. During the five years ending 1903-4 they irrigated an average annual area of 409 square miles and yielded an average gross revenue of 3.5 lakhs or, inclusive of the land revenue due to irrigation (which is credited to the canals in the accounts), 5.4 lakhs per annum. The average annual working expenses during the same period were 3.6 lakhs. There was, therefore, an annual profit of 1.8 lakhs. No capital expenditure was recorded against the canals till 1854-5; up to the end of 1903-4 it has amounted to 17 lakhs.

The Katora Canal has a bed-width of 55 feet, and an authorized discharge of 685 cubic feet per second. It was made in 1870-1, and follows the bed of a nullah for 21 miles, when it separates into three channels called the Pakhoki, Atāri, and Chuniān distributaries. The Khānwah has a bed-width of 65 feet, and an authorized full supply of 1,290 cubic feet per second. The date of first opening is not known: it is, however, recorded that the canal was improved by Mirza Khān, a minister of the emperor Akbar; but it was neglected by his successors, and silted up. In the time of Ranjit Singh, Dīwān Rādha Rām repaired the head and cleared the channel, and the canal flowed from 1807 to 1823. It was again neglected till 1841, when Fakīr Chirāgh-ud-dīn, under the orders of Mahārājā Sher Singh, had the canal repaired, and it was in flow when taken over by the Irrigation department on the annexation of the Punjab. The Upper Sohāg Canal has a bed-width of 60 feet, and an authorized discharge of 1,540 cubic feet per second. It appears to have been made in 1827, and worked till 1840, when it was neglected; and nothing further was done to it till 1855, when, the canal having been

taken over by the Irrigation department, the channel was again put into working order. The Lower Sohāg Canal has a bed-width of 90 feet, and an authorized discharge of 1,420 cubic feet per second. It may be said to date from 1816, when the first attempt to irrigate was made by means of a dam across the Sohāg nullah, which caused it to overflow its banks. In 1831 another dam was made, and the water was led on to the lands of Jawand Singh at Dipālpur, who is said to have obtained a large return from the water. After some fighting the dam was demolished in 1835; and from that date the canal existed only in name, irrigation being effected on only 3,000 acres by lifts by means of a narrow cut 20 feet wide. In 1885-6 the present regular canal was opened. The canal follows generally the Sohāg nullah for 33 miles, till it gives off the Pāra nullah. The canal continues in the form of two branches, one along the Pāra nullah and the other along the Sohāg nullah. The channel, however, was not formed in the bed, but consists of an artificial cut, which is crossed and re-crossed by the tortuous dry nullahs. The canal was constructed mainly for the purpose of bringing under cultivation 142 square miles of Government waste. This area was colonized by allotting parcels of land to chosen peasants from adjacent over-populated Districts. For the purpose of allotment the land was divided into squares, 27.7 acres in area, and each allotment consisted of 4 squares or 111 acres. The canals being dry in the cold season the colonists were required to construct wells, at least one well per holding being necessary.

Grey Canals.—A system of inundation canals in the Punjab, taking off from the south bank of the Sutlej and irrigating the low-lying tracts of Ferozepore District. They take their name from Colonel L. J. H. Grey, under whose orders, as Deputy-Commissioner of the District, they were constructed. The work was begun in 1875-6, when 11 canals were made; the number was increased to 13 in 1883; and in 1885, after the incorporation of the Fāzilka *taksil* in Ferozepore District, two of the canals were remodelled and extended so as to irrigate this *taksil*. In addition to these, a new canal, named Kingwāh, has just been completed at a cost of 1.7 lakhs. The 14 canals as they now exist vary in length from 28 to 107 miles, in bed-width from 30 to 80 feet, and in discharge from 283 to 640 cubic feet per second. Their total length is 1,034 miles, and their aggregate discharge 6,340 cubic feet per second. Being inundation canals, they run only when the Sutlej is at a sufficient height. Up to and including 1905-6

the total cost on original works has been 11·6 lakhs (exclusive of the 1·7 lakhs spent on the new Kingwāh Canal), and on repairs and establishment 23·4 lakhs. The average area irrigated during the five years ending 1905-6 was 277 square miles. The canals are remarkable as being constructed and maintained on the co-operative system without any direct aid from Government, except a small grant towards the cost of establishment in Fāzilka which has been stopped since the last settlement (1902). The excavation work was performed by the agriculturists whose lands the canal was to benefit, supervised by the ordinary revenue staff of the District. Since 1881 the special establishment required for their up-keep has been met by a charge of 3 to 4 annas per *ghumao* (five-sixths of an acre); and the annual silt clearance and other works have been carried out at the expense of the irrigators at the average rate of 8 to 10 annas per irrigated *ghumao*. In addition to these charges for maintenance, a royalty of 12 annas per *ghumao* of superior, and 6 annas per *ghumao* of inferior, crops is taken by Government.

Ghaggar Canals.—An Imperial system of minor canals in the Punjab, taking off from the Ghaggar. Owing to the waste of water in the lakes and swamps of that river, and the insanitary condition to which the low-lying lands in the valley below Sirsa were reduced, it was agreed between the British Government and the State of Bikaner that the Dhanūr lake, about 8 miles from Sirsa, should be converted into a reservoir by the construction of a masonry weir at Otu, and that irrigation should be effected by two canals, the northern and southern, taking off from each end of the weir, with a combined capacity of 1,000 cubic feet per second. The Bikaner State was to share the canal supplies and meet a proportionate part of the cost. The canals were constructed with famine labour in 1896-7, and began to irrigate in the monsoon of 1897. The areas commanded in British and Bikaner territory are 130 and 117 square miles, and the irrigable areas are 53 and 35 square miles, respectively. There are 95 miles of main canals and 24 of distributaries; and the total capital outlay to the end of March, 1904, was 6·3 lakhs, of which 2·8 lakhs was debited to Bikaner. These canals are never likely to show any return on their capital cost, as only part of the irrigated area is assessed to canal occupiers' rates, the remainder being assessed to land revenue only.

Sutlej Inundation Canals, Lower.—An Imperial system of inundation canals in the Punjab, taking off from the right bank of the Sutlej and irrigating part of Multān District. They

off from the left bank of the Rāvi and watering part of Multān District. It derives its name, meaning 'straight,' from a remarkable reach of the Rāvi, which extends in a perfectly straight cutting for 10 or 12 miles from Tulamba to Sarai Sidhu. It was opened for irrigation in 1886. The head-works consist of a weir 737 feet long, built across this reach. The main line has a bed-width of 90 feet and a maximum discharge of 1,820 cubic feet per second; after 30 miles it divides into two large distributaries, which between them take nearly one-third of the whole supply. The very short length of the canal compared with the area irrigated is one cause of its financial success. There are in all thirteen main distributary channels taking off from the main line, and three subsidiary canals which take off from the river above the dam. The gross area commanded is 595 square miles, of which the greater part was Government waste, and was settled by colonists brought from various parts of the Punjab, the land being given out for the most parts in 90-acre plots. Although the whole of the water in the Sidhnai reach can be turned into the canal, the Rāvi in the winter is often absolutely dry, owing to the supply taken by the Bāri Doāb Canal, so that the spring crop has to be matured by the aid of wells. The average area irrigated during the three years ending 1903-4 was 190 square miles. The capital outlay up to the end of 1903-4 was about 13 lakhs, and the average annual profit more than 11 per cent.

Chenāb Inundation Canals.—A system of inundation canals in the Punjab, taking off from the left bank of the Chenāb below its confluence with the Rāvi, and irrigating part of the Multān and Shujābād *tahsils* of Multān District. They were for the most part constructed by the Pathān rulers of Multān and Shujābād, and were once thirteen in number; but by amalgamation the heads in the river have been reduced to four, the Mattithal, Wali Muhammad, Sikandarābād, and Sikandarwāh. As the canal-irrigated land is much lower than the river-level in July and August, the outer banks of the canals are made specially high and strong to keep the flood-waters from pouring over the cultivated land, and in certain lengths of the river embankments have been constructed. In this way there is a chain of protection about 80 miles long on the east bank of the river. The maximum discharge of the canals is 5,200 cubic feet per second: there are 252 miles of main canals and 46 miles of Government distributaries. Until recently water was taken from the main canal entirely by private watercourses, but the construction of properly aligned distri-

butaries is now in progress. The system by which the cultivators, in lieu of paying for the water, provided labour for silt clearance has recently been abolished, and occupiers' rates imposed. No capital account is kept for these canals. The gross revenue during the three years ending 1903-4 averaged 3.3 lakhs yearly, and the net revenue Rs. 47,000. The average area irrigated during the six years ending 1903-4 was 214 square miles.

Muzaffargarh Canals.—An Imperial system of inundation canals in the Punjab, taking off from the left bank of the Indus and the right bank of the Chenāb, and irrigating portions of Muzaffargarh District. They were for the most part constructed by the native rulers of the District, and improved by Sāwan Mal, governor under Ranjit Singh. After annexation the canals remained for many years under the management of the Deputy-Commissioner, and were transferred to the Canal department as a 'minor' work in 1880. The system of canal clearance by the labour of the cultivators was finally abolished in 1903, when occupiers' rates were introduced. The Indus series, which is by far the more important of the two, consists of eight canals with an aggregate length of 1,138 miles of main, branch, and distributary channels, and a total average discharge of 2,570 cubic feet per second. There are five canals in the Chenāb series, with a total length of 232 miles, and a discharge of 740 cubic feet per second. The gross area commanded by the canals is 1,205 square miles, of which 1,055 are cultivable and 547 irrigable, the area irrigated during the five years ending 1903-4 averaging 457 square miles, of which 366 square miles were watered from the Indus. To protect the irrigated country, embankments have been constructed, stretching for 119 miles along the Indus and for 40 miles along the Chenāb. No capital account is kept for the system. The gross revenue in 1903-4 was 6 lakhs and the net revenue 3.3 lakhs.

Indus Inundation Canals.—An Imperial system of inundation canals in the Punjab, taking off from the west bank of the Indus, and irrigating part of Dera Ghāzi Khān District. They are fourteen in number and cover a river frontage of 175 miles, protecting a low-lying narrow strip of country from 6 to 16 miles wide, known as the Sind. These were mostly constructed by the Mirāni chiefs and other native rulers, and were greatly improved by Sāwan Mal, governor under Ranjit Singh. Five, however, were constructed by Baloch chiefs in 1862-3 for the use of their tribal lands, but proving a financial failure were bought up by Government. The gross area commanded is 1,374 square miles, of which 661 are cultivable.

the Bhatti chief, was married to Sipāh Sālār Rajab, and in 1309 became the mother of Fīroz Shāh III. The Bhatti chiefs seem to have maintained a position of semi-independence for a considerable time. Rai Hansu, Bhatti, son of Khul Chain, was employed under Mubārak Shāh II against Pulād in 1430 and 1431. Later, the Bhatti chief Ahmad Khān, who had risen to great power and had 20,000 horse under him, defied prince Bāyazīd in the reign of Bahlol Lodī, and, though at first victorious, was eventually defeated and killed. Mirza Kāmran was employed against the Bhattis in 1527, and they seem to have been reduced to complete subjection by the Mughals, for nothing is heard of them until the decay of the Delhi empire. For twenty-four years after 1750 Bhattiāna was harassed by the Sikhs and Bhattis in turn, until in 1774 Amar Singh, the Rājā of Patialā, conquered it. But Patialā was unable to hold the tract, and lost the whole of it (Rānia in 1780-3, Fatehābād in 1784), the Bhatti reconquest being facilitated by the great famine of 1783 which desolated the country. Sirsa fell to George Thomas in 1795-9; and on his fall in 1801 the Marāthās acquired Bhattiāna, only to lose it in 1803 to the British, who took no steps to establish a strong government. At that time Bhattiāna was divided between the chiefs Bahādur Khān and Zābita Khān, of whom the former held the country in the neighbourhood of Fatehābād, while the latter owned Rānia and Sirsa. In 1810 the raids of Bahādur Khān had become intolerable, and an expedition sent against him annexed Fatehābād, while in 1818 the territories of Zābita Khān were acquired. The country thus obtained formed the subject of a long dispute with the Patialā chief, who had encroached on it between 1818 and 1837. It was finally awarded to the British Government, and made into a separate District of Bhattiāna, which was transferred to the Punjab under the name of Sirsa District after 1857. (See HISSAR.)

Bist Jullundur Doāb.—A *doāb* or 'tract between two rivers' (the Beās and Sutlej) in the Punjab, lying between 30° 57' and 32° 7' N. and 75° 4' and 76° 38' E., and comprising Jullundur and Hoshiārpur Districts, and the State of Kapūrthala. The name was formed by the Mughal emperor Akbar, by combining the first syllables of the names of the two rivers. It is also known as the Sāharwāl Doab.

Chaj (Jech) Doāb.—A *doāb* or 'tract between two rivers' (the Chenāb and Jhelum) in the Punjab, lying between 31° 10' and 33° 0' N. and 72° 7' and 74° 3' E., and comprising

made in the relations between the defaulting States and the paramount power. The most flagrant offenders were punished by confiscation, and the remainder were deprived of their police jurisdiction, and of the right to levy customs and transit duties, while the obligation to furnish troops was commuted for a money payment. Nine chiefs only, those of Patiala, Nabha, Jind, Māler Kotla, Farīdkot, Kalsia, Raikot, Dīālgarh, and Mamdot, were exempted from this arrangement, and allowed to retain full powers.

These reforms added largely to the territory under the direct control of the British Government. The head-quarters of the Agent had been transferred to Lahore, and a Commissioner of the Cis-Sutlej States was appointed, subordinate to him. It was speedily found that, without police jurisdiction, the position of the States was an impossible one; and in 1849, after the conquest of the Punjab, the British Government assumed complete control throughout their territories, which were shortly afterwards brought under settlement, and the revenues assessed in cash. The position of the chiefs, and of the representatives of the old communities of horsemen (known as *pattidārs*), who were thus deprived of their former powers, became that of ordinary *jāgirdārs*; and the right of succession to the *jāgirs* is confined to the descendants in the male line of the persons actually in possession in 1809, the date of the declaration of the British protectorate. Of the States which were allowed to retain powers in 1846, Dīālgarh lapsed in 1852 and Raikot in 1854, while Mamdot was annexed in 1855 in consequence of the misconduct of the Nawāb. The defunct States are now incorporated in the Districts of Ambāla, Karnāl, Ludhiāna, Ferozepore, and Hissār.

Hariāna.—A tract of country in the Punjab, lying between $28^{\circ} 30'$ and 30° N. and $75^{\circ} 45'$ and $76^{\circ} 30'$ E., chiefly in the eastern half of Hissār District, but also comprising part of Rohtak District and of the States of Jind and Patiala. It is in shape an irregular oval, with its long axis lying north-west and south-east. On the north-west it is bounded by the Ghaggar valley; on the west, south-west, and south by the Bagār and Dhundauti, or sandy tracts which are the continuation of the Bikaner desert; on the east by the Jumna riverain; and on the north-east by the Nardak country, from which it is divided by a line roughly coinciding with the alignment of the Southern Punjab Railway. The name of Hariāna is most probably derived from *hari* ('green'), and is reminiscent of a time when this was a rich and fertile tract. Archaeological

called the Dharmakshetra or 'holy land,' and would appear to have been famous long before the time of the Kauravas, for at Thānesar Parasu Rāma is said to have slain the Kshattriyas, and the lake of Sarvanavat on the skirts of Kurukshetra is alluded to in the Rig-Veda in connexion with the legend of the horse-headed Dadhyanch. Nardak is another name for Kurukshetra, probably derived from *nirdukkh*, 'without sorrow.' The Chinese pilgrim, Hiuen Tsiang, who visited it in the seventh century, calls it 'the field of happiness.' Kurukshetra contains, it is said, 360 places connected with these legends, or with the cults of Siva and the Sun-god, which have long been places of pilgrimage. Of these the principal are THĀNESAR, PEHOWA, JĪND, SAFĪDON, and KAITHAL, but numerous other sites preserve their ancient names and sanctity.

Mālwa.—Tract in the Punjab, lying between 29° and 31° N. and $74^{\circ} 30'$ and 77° E., and comprising the area south of the Sutlej occupied by the Sikhs. It includes the Districts of Ferozepore and Ludhiāna, and the Native States of Patiāla, Jīnd, Nābha, and Māler Kotla. The tract is a great recruiting ground for Sikh regiments, being in this respect second only to the Mānjha. It is said that the name is a modern one, the title of Mālavā Singh having been conferred on the Sikhs of the tract for their valour by Banda, Bairāgi, who promised that it should become as fruitful as Mālwa.

Mānjha.—A tract of country in the Lahore and Amritsar Districts of the Punjab, lying between $30^{\circ} 52'$ and $21^{\circ} 35'$ N. and $73^{\circ} 45'$ and $75^{\circ} 21'$ E., and forming a portion of the uplands of the Bāri Doāb. In shape it is, roughly speaking, a triangle whose base may be taken as the grand trunk road crossing Lahore and Amritsar Districts from the Rāvi to the Beās, and whose sides are the high banks marking the ancient courses of those rivers. From the point where the Beās now joins the Sutlej, the old Beās bank diverges from the present course of the Sutlej and approaches the old bed of the Rāvi near the borders of Montgomery District. This is the apex of the Mānjha, for, though the upland ridge is continued as far as Multān, from this point it bears the name of the Ganji Bār. Before the construction of the Bāri Doāb Canal the Mānjha was an ill-watered and infertile expanse, described by the Settlement officer of Lahore in 1854 as a jungle in which only the poorer cereals and pulses could be grown. Now, however, the Bāri Doāb Canal runs through the whole length of the tract, which is second in fertility to none in the Province. The Sikhs of the Mānjha are some of the finest specimens of the

from west to east by the Sind-Sāgar branch of the North-Western Railway, which turns abruptly south at Kundiān and runs parallel with the Indus down the western border of the Thal. The eastern part of the steppe is called the Thal Kalān or 'Great Thal'; and here a line of high sandhills, running north-east and south-west, alternates with narrow bottoms of soil, stiff and hard in places, but more often covered with sand. Towards the west the hills become lower and less sandy. Agriculture here replaces pasturage as the occupation of the people, and in the Leiah *takht* a broad strip of nearly level ground runs down from Fatehpur towards Mirhan. This tract is called Daggar in the north and Jandi Thal in the south. The main feature of the Daggar is its central core—a narrow strip of firm, flat, cultivable soil, which runs, like a river, from north to south down its centre. From the line of wells in this portion the Daggar takes its name. The good land ends near Khānpur in a region of smooth sand, to be succeeded near Karor by another fertile strip, which forms a core similar to the Jandi Thal. There is little doubt that the Indus once flowed down the middle of the Thal. Last we come to the Powah, a strip of upland some 3 miles broad forming the high bank of the Indus. In the north this bank rises abruptly 40 feet from the river-level, but towards the south it gradually gets lower, until it disappears at Kot Sultān. Large villages, whose lands lie in the riverain tract below, are built on the Powah, where the floods are less likely to reach them. The Thal is peopled by Jat tribes with scattered septs of Sial, Khokhar, and other Rājputs, and it was for a time under the Hot Baloch chiefs of MANKERĀ. That its natural characteristics have a depressing effect on the people is hardly a matter of surprise, and they are, to use their own expression, 'camel-hearted.' The tract will probably be irrigated by the projected Indus Canal.

Bombay monsoon currents, the most striking feature in the rainfall is its extreme variability, and the partial manner in which it is distributed. The yearly average varies from 14 inches at Sirsa to 16 at Hissār, where 14 inches fall in the summer and 2 in the winter. The greatest annual rainfall recorded during the last twenty years was 37.4 inches at Bhiwāni in 1885-6, and the least 3.1 inches at Sirsa in 1899-1900.

A large part of the District is, with parts of Rohtak, better known to history as HARIĀNA. The once fertile tract watered by the Ghaggar had its capital at Hānsi, which was the ancient capital and southernmost point of the Siwālik territory, and which archaeological investigations show to be one of the oldest towns in India. The numerous architectural remains of Hindu origin, found built into the walls of Muhammadan tombs and mosques throughout the District, testify to its having been the abode of an ancient and vigorous Hindu civilization. The most interesting of these are to be found at HISSĀR, HĀNSI, FATAHĀBĀD, and TOSHĀM. An inscription at Toshām seems to commemorate a victory over Ghatotkacha, the second known member of the Gupta line (*circa* A.D. 305), and it appears probable that Hānsi was a stronghold of the Kushan rulers of the Punjab.

History
and
archaeo-
logy.

The District is said to have been overrun in the eighth century by the Tomar Rājputs, and afterwards to have fallen under the dominion of the Chauhāns. In 1036 Hānsi was captured by Masūd, son of Mahmūd of Ghazni; but in 1043 it was retaken by the Delhi Rājā, probably a Tomar vassal of the Chauhāns. After the defeat of Prithwī Rāj by Muhammad of Ghor in 1192, the Jāts laid siege to Hānsi, but were defeated by Kutb-ud-dīn. Hānsi then became a fief of the Delhi kingdom. The districts of Delhi, Ajmer, Hānsi, and Sirsa fell into the hands of the conqueror; but no settled rule seems to have been at first established in this tract, which in the ensuing anarchy was dominated by the Jātu Rājputs, an offshoot of the Tomars. Muhammadan power was, however, gradually consolidated; and about 1254, in the reign of Mahmūd Shāh I, the District, including Hānsi, Sirsa, Barwāla, and Jind, was assigned as a fief to Ulugh Khān-i-Azam, afterwards the emperor Balban.

Until the eighteenth century the tract remained a flourishing division of the Muhammadan empire, and Sirsa or Sarsūti was in the fourteenth century, according to Wassāf, one of the most important towns in Upper India. The towns of Fatah-

ābād and Hissār were founded in 1352 and 1356 respectively by Firoz Shāh III, and canals were dug from the Ghaggar and Jumna for their use. After the capture of Bhatnair, Tīmūr marched through the District via Sirsa, Fatahābād, Rajabpur, Ahrūni, and Tohāna. It is evident from his account that these towns were wealthy and prosperous, for he took much booty in Sirsa, Fatahābād, and Ahrūni, and drove the Jāts of Tohāna into their sugar-cane fields and jungles.

During the eighteenth century the country appears to have been held by Muhammadan tribes claiming Rājput origin, of whom the chief were the Johiyas round Bhatnair (HANUMĀN-CARH) and the Bhattis about Rānia, Sirsa, and Fatahābād, from whom the western part of the District took its name of BHATTIĀNA. The Bikaner annals tell of the incessant struggles of the Hindu Rājputs of that State with the Johiyas and Bhattis for the possession of Bhatnair and sometimes of Sirsa; and the chronicles of Patiāla are full of raids and counter-raids between the Sikh Jats and their hereditary foes, the Bhattis. On the death of Aurangzeb in 1707 we find Nawāb Shāh Dād Khān, a Pathān of Kasūr, *nāzim* of the *sarkār* of Hissār; and under his rule, from 1707 to 1737, the people and country appear to have prospered exceedingly. He was succeeded by the Nawābs of Farrukhnagar, in Gurgaon, who ruled till 1761. But Nādir Shāh ravaged the land in 1739; and with the disintegration of the Delhi empire Hissār became the scene of a sanguinary struggle between the Sikhs of the north-east, the marauding Bhattis of the north and north-west, and the imperial power of Delhi. In 1731 Ala Singh, the founder of the Patiāla State, had commenced a struggle with the Bhatti chiefs of Bhatnair and Fatahābād which lasted during his lifetime; the Bhattis, though supported by imperial troops, were defeated in 1754 and 1757, and Hissār was sacked in 1757 and Tohāna in 1761. In the latter year Nawāb Amīn Khān, the Bhatti chief of Rānia, was appointed *nāzim* of Hissār; but he had no better fortune, and by 1774 Amar Singh, successor of Ala Singh, had become master of the whole of the Hānsi, Hissār, and Sirsa territories. On Amar Singh's death in 1781, an agreement was made whereby Hissār, Hānsi, Toshām, Rohtak, and Maham were assigned to the empire, Sirsa and Fatahābād to the Bhattis, and the rest of their conquests to the Sikhs; but the great famine of 1783, which entirely devastated the District, compelled the latter to retire to their own country. The territories thus left derelict were in 1798 occupied by the adventurer George Thomas, who for three years maintained

General
agricul-
tural con-
ditions.

The District is divided into four natural tracts. Of these, the Rohi of the Sirsa *tahsil* stretches from the northern boundary to the Ghaggar. Its soil is a soft loam with a reddish tinge, interspersed with sand and clay; the water-level in the wells varies from 40 to 180 feet, the crops depend entirely on rainfall, and vegetation is sparse. South of the Rohi lies the western extremity of the Nāli tract, stretching from east to west through the Fatahābād and Sirsa *tahsils*, and traversed by the Ghaggar and Johiya. Its characteristic feature is a hard iron-clay soil, which permits of no cultivation until well saturated by the summer floods. Here the harvest depends on inundation from the Ghaggar and Johiya, helped in some parts by well-irrigation. The Bāgar tract stretches from the south and south-west of Sirsa along the western border of the District, through Sirsa, Fatahābād, Hissār, and Bhiwāni, gradually widening towards the south. Here the prevailing features are a light sandy soil and shifting sandhills, interspersed in parts with firmer and even loamy bottoms; the spring-level is more than 100 feet below the surface, and the water frequently bitter. Practically the *khariif* is the only harvest sown, and that depends entirely on a sufficient rainfall. The Hariāna tract stretches from the tract watered by the Ghaggar to the south-east corner of the District; it comprises the whole of Hānsi and the eastern portions of Fatahābād, Hissār, and Bhiwāni, and is traversed by the WESTERN JUMNA CANAL. The leading feature of the tract is its firm clay soil; sandhills are found, and in low-lying parts hard clayey soil. The spring-level is generally below 100 feet, except in canal villages where it rises to 30 or 40 feet. Apart from the canal tract, agriculture is practically confined to the autumn harvest. The small jungle tract of Budhlāda, consisting of 15 outlying villages in the north of the Fatahābād *tahsil*, is sometimes classed as a fifth tract, but resembles the Rohi. Taking the District as a whole, only 9 per cent. of the cultivation is irrigated, and the rainfall is therefore of the utmost importance; on the rainfall of June and July depends the sowing of the autumn crops, and on that of August and September the ripening of the autumn and the sowing of the spring crops. Until recently the autumn harvest was the mainstay of the District; but of late years, owing to the good prices obtained for wheat, the spring harvest has taken the leading place, and the best season is one in which there is heavy rain at the end of August and all through September.

The area for which details are available from the revenue

records of 1903-4 is 5,180 square miles, as shown in the following table:—

Chief agricultural statistics and principal crops.

<i>Tahsil.</i>	Total.	Cultivated.	Irrigated.	Cultivable waste.
Hissar . . .	810	623	53	98
Hansi . . .	799	690	180	60
Bhiwani . . .	750	603	6	110
Fatahabad . . .	1,179	1,300	69	165
Sirsa . . .	1,642	945	75	300
Total	5,180	4,161	383	733

The principal staples of the spring harvest are gram and barley, the areas under which in 1903-4 were 478 and 168 square miles respectively. Wheat covered only 109 square miles. The chief food-grain of the autumn harvest is spiked millet, which occupied 929 square miles. Great millet comes next in importance with 38 square miles, and then pulses with 175. Practically all the sugar-cane and cotton grown is irrigated, with four-fifths of the maize, three-fifths of the rice, and two-fifths of the wheat. No other crop is irrigated to any appreciable extent.

The cultivation of rice has of late years been prohibited in canal lands, and its place largely taken by cotton. Experiments are being carried on chiefly with the object of introducing cotton of a longer staple. There is great room for improvement in the methods adopted by the people for utilizing the canal water at their disposal.

Large advances are given both under the Land Improvement Loans Act for digging and clearing wells, and under the Agriculturists' Loans Act for the purchase of bullocks and seed. During the five years ending September, 1904, a total of Rs. 73,000 was advanced under the former and 18 lakhs under the latter Act, of which Rs. 43,627 and 10.5 lakhs respectively was advanced during the famine year 1899-1900.

Hariāna has been always famous for its cattle, which were the chief support of its former pastoral inhabitants. The breed is still good, though cattle-breeding is somewhat on the wane owing to the spread of cultivation. The Hissar Government cattle farm was started in 1813, and now covers 66 square miles. The pure breeds of cattle maintained are the Gujarāti, Ungoli, Nagaur, and Mysore, which are also crossed with Hariāna cows. Of late years mule-breeding has been commenced. Large cattle fairs are held at Hissar and Sirsa, at which it is estimated that animals of the total value of 6½ lakhs

Cattle, horses, and sheep.

are sold annually. The camel is used in all parts for riding and carrying loads, and where the soil is light does a large part of the ploughing. The local breed of horses is in no way above the average. The District board maintains five horse and four donkey stallions.

Irrigation. Of the total area cultivated in 1903-4, 383 square miles, or nearly 9 per cent., were classed as irrigated. Of this area, 6 square miles were irrigated from wells and 377 from canals. In addition, 83 square miles, or 2 per cent., are subject to inundation from the Ghaggar and other streams. The Hānsi branch of the WESTERN JUMNA CANAL irrigates the Hānsi, Hissār, and Bhiwāni *tahsils*, while the Sirsa branch irrigates parts of Fatahābād, Hissār, and Sirsa. The GHAGGAR CANALS supply part of the Sirsa *tahsil*, and the Budhlāda tract and a portion of Sirsa are watered by the SIRHIND CANAL. The area under canal-irrigation increased from 120 square miles in 1891 to 377 in 1904. The area supplied by wells is insignificant, owing to the great depth to water, and the chief use of well-irrigation is to enable sowings to be made for the spring harvest. The total number of wells in use for irrigation was only 854 in 1903-4, all being worked by cattle on the rope and bucket system.

Forests. The greater part of the cattle farm, known as the Hissār Bīr, is a 'reserved' forest, measuring 65 square miles, under the Civil Veterinary department, the income from which in 1903-4 was Rs. 4,379. The Bīr at Hānsi is an unclassified forest under the same department. Three pieces of grazing-ground are managed by the Deputy-Commissioner at Hissār, Sirsa, and Hānsi for the town cattle. The total area of forest land is: 'reserved,' 65 square miles; and unclassified, 5 square miles. Trees have been extensively planted with the aid of canal water by the District board in and around the civil station of Hissār and the town of Hānsi, and the Bīr at Hānsi is also being planted with trees to make a fuel reserve.

Minerals. *Kankar* is found in many localities. Saltpetre is manufactured from saline earth in the villages, and refined in licensed refineries at Bhiwāni, Hānsi, and Sirsa.

Arts and manufactures. The District has no manufactures of importance. Coarse country cloth is made almost everywhere; and there are 10 cotton-ginning factories, 3 cotton-presses, and 3 factories where ginning and pressing are combined. Hānsi is the industrial centre; but four of the factories are at Bhiwāni, and one at Narnaund, while the cotton-mills of Messrs. Chandu Lal & Co. at Hissār are the largest in the District. These indus-

subdivi-
sions and
staff.

by three Assistant or Extra Assistant Commissioners, of whom one is in charge of the Sirsa *tahsil* and subdivision. Each of the five *tahsils* is in charge of a *tahsildār* assisted by a *naib-tahsildār*. Dabwāli in Sirsa and Tohāna in Fatahābād are sub-*tahsils* under *naib-tahsildārs*.

Civil
justice
and crime.

The Deputy-Commissioner as District Magistrate is responsible for the criminal justice of the District. Civil judicial work is under a District Judge. Both officers are supervised by the Divisional Judge of Ferozepore. The District Judge has a Munsif under him at head-quarters, and there are four honorary magistrates. Cattle-theft is the principal crime of the District, for which its position, surrounded by Native States, affords peculiar facilities. It is practised chiefly by the Muhammadan Rājputs and Pachhādas.

Land
revenue
administra-
tion.

The revenue history of Hissār proper is quite distinct from that of the Sirsa *tahsil*, which was only added to the District on the disruption of the old Sirsa District in 1884. The greater part of Hissār was occupied by the British in 1810, and underwent three summary settlements for ten, five, and ten years successively, between 1815 and 1840. The main feature of these assessments was a demand so high that full collections were the exception, and the frequent remissions demoralized both the revenue officials and the people. A rush of immigrants had taken place on the establishment of settled government, and when disturbances occurred in the neighbouring Native States, Hissār formed a convenient refuge. The land revenue, however, was fixed and collected with such a complete disregard of the chances of bad seasons, that when the cultivators were pressed for payment they moved off into the Native States whence they had come. The demand of the first settlement (1815-25) was so high that it exceeded by 20 per cent. the revenue fixed in 1890 for the same villages. High though this assessment was, it was increased in the two settlements that followed, until between 1835 and 1839 the demand was 4·9 lakhs for a tract which in 1890 was assessed at only about two-thirds of that sum.

The amount fixed at the regular settlement of 1840 was 37 per cent. below the old demand. The canal villages were assessed at irrigated rates for the first time in 1839. The reduction came as a new lease of life to the impoverished landholders, and the progress made since has been steady, interrupted only by famine. A revised settlement was made in 1863, which resulted in a further reduction of half a lakh. The second revised settlement was carried out between 1887

and 1892. Cultivation had more than doubled, while prices had risen 60 per cent., and the result was an increase of 58 per cent. to 6 lakhs. The rates varied from 3 to 8 annas per acre, exclusive of canal rates. About 90 per cent. of the tenants pay rent in cash.

The Sirsa *tahsil*, with the rest of the old Sirsa District, was summarily settled in 1829 and regularly in 1851. In 1881-2, the last year of the regular settlement, the demand stood at 1.4 lakhs, which was raised by the new assessment to 1.9 lakhs. The assessment was revised for the second time between 1901 and 1903, and a fixed assessment of 2 lakhs was announced. The area subject to the very precarious Ghaggar floods was placed under fluctuating assessment, fixed rates for the various crops grown being applied to the area actually cropped every harvest. It is estimated that the yield from this fluctuating assessment will be Rs. 39,000 per annum.

The collections of land revenue alone and of total revenue are shown below, in thousands of rupees :—

	1880-1.	1890-1.	1900-1.	1903-4
Land revenue .	4.26	7.60	6.48	8.09
Total revenue .	5.08	9.63	9.99	11.90

The District contains four municipalities, HISSĀR, HĀNSI, Local and BHIWĀNI, and SIRSA; and three 'notified areas,' FATAHĀBĀD, municipal. TOHĀNA, and Budhlādā. Outside these, local affairs are managed by the District board, whose income amounted in 1903-4 to 1½ lakhs. The expenditure in the same year was 1.3 lakhs, education and public works forming the principal items.

The regular police force consists of 681 of all ranks, includ. Police and ing 180 municipal police, under a Superintendent who is jails. usually assisted by four inspectors. The village watchmen or *chaukidārs* number 1,474, and 42 *chaukidārs* are directly under the Superintendent. There are 19 police stations, 4 outposts, and 6 road-posts. The District jail at headquarters has accommodation for 252 prisoners.

The District stands twenty-fifth among the twenty-eight Education. Districts of the Province in respect of the literacy of its population. In 1901 the proportion of literate persons was 2.7 per cent. (5 males and 0.1 females). The number of pupils under instruction was 1,753¹ in 1880-1, 3,568 in

¹ For the District as then constituted.

1890-1, 3,803 in 1900-1, and 4,258 in 1903-4. In the last year there were 6 secondary and 73 primary (public) schools, and 3 advanced and 46 elementary (private) schools, with 167 girls in the public and 91 in the private schools. The Anglo-vernacular schools at Hissār, Bhiwāni, and Sirsa are the most important. Two girls' schools at Bhiwāni are maintained by the Baptist Zanāna Mission. The total expenditure on education in 1903-4 was Rs. 40,000, to which Provincial funds contributed Rs. 2,000, municipalities Rs. 11,000, fees Rs. 10,000, and District funds Rs. 16,000, while the rest (Rs. 1,000) was met from subscriptions and endowments.

Hospitals
and dis-
pensaries.

Besides the dispensary at Hissār, the District possesses eight outlying dispensaries. In 1904 the number of cases treated was 73,530, of whom 2,216 were in-patients, and 6,027 operations were performed. The expenditure was Rs. 20,000, the greater part of which was met from municipal funds.

Vaccina-
tion.

The number of successful vaccinations in 1903-4 was 10,038, or 23.7 per 1,000 of the population.

[J. Wilson, *General Code of Tribal Custom in the Sirsa District* (1883); P. J. Fagan, *District Gazetteer* (1892, under revision); A. Anderson and P. J. Fagan, *Settlement Report of Hissār* (1892); C. M. King, *Settlement Report of Sirsa and Fūzilka Tahsils* (1905).]

Hissār Tahsil.—*Tahsil* of Hissār District, Punjab, lying between 28° 54' and 29° 32' N. and 75° 22' and 76° 2' E., on the borders of the Bikaner desert, with an area of 810 square miles. The population in 1901 was 128,783, compared with 122,299 in 1891. Hissār (population, 17,647) is the head-quarters, and the *tahsil* also contains 134 villages. The land revenue and cesses amounted in 1903-4 to 1.6 lakhs. The northern part is a bare plain, forming part of the tract known as Hariāna, where the soil is a firm sandy loam. South of the thin belt of fertility afforded by the Western Jumna Canal, the level stretches of poor cultivation gradually merge into the rolling sandhills characteristic of the neighbouring State of Bikaner.

Hānsi Tahsil.—*Tahsil* of Hissār District, Punjab, lying between 28° 51' and 29° 27' N. and 75° 48' and 76° 20' E., with an area of 799 square miles. The population in 1901 was 178,933, compared with 165,689 in 1891. It contains the town of Hānsi (population, 16,523), the head-quarters, and 132 villages. The land revenue and cesses amounted in 1903-4 to 2 lakhs. The whole of the *tahsil* lies within the

tract known as Hariāna. The northern part is irrigated by the Western Jumna Canal, and is comparatively well wooded. South of the canal the country is featureless, but fertile enough in a year of good rainfall.

Bhiwāni Tahsil (*Bhawāni*).—*Tahsil* of Hissār District, Punjab, lying between $28^{\circ} 36'$ and $28^{\circ} 59' N.$ and $75^{\circ} 29'$ and $76^{\circ} 18' E.$, with an area of 750 square miles. The population in 1901 was 124,429, compared with 127,794 in 1891. The head-quarters are at the town of BHIWĀNI (population, 35,917); and it also contains 131 villages, among which TOSHĀM is a place of some historical importance. The land revenue and cesses amounted in 1903-4 to 1.2 lakhs. The northern part of the *tahsil* lies in Hariāna. South of Bhiwāni town rolling sandhills and low rocky eminences are the main features of the landscape.

Fatahābād Tahsil (*Fatehābād*).—*Tahsil* of Hissār District, Punjab, lying between $29^{\circ} 13'$ and $29^{\circ} 48' N.$ and $75^{\circ} 13'$ and $76^{\circ} 0' E.$, with an area of 1,179 square miles. The population in 1901 was 190,921, compared with 181,638 in 1891. It contains one town, FATAHĀBĀD (population, 2,786), the head-quarters, and 261 villages, among which TOHĀNA and AGROHA are places of historical or archaeological interest. The land revenue and cesses amounted in 1903-4 to 2.3 lakhs. The Ghaggar has cut for itself a deep channel in the north of the *tahsil*. To the south of this channel lies a broad belt of stiff clay, covered with sparse jungle interspersed with stretches of precarious cultivation, which depend on occasional floods brought by natural and artificial channels from the Ghaggar. The east of the *tahsil* lies in Hariāna, but the centre and south are bare and sandy. A portion is irrigated by the Western Jumna Canal.

Tohāna Sub-tahsil.—Sub-*tahsil* of the Fatahābād *tahsil* of Hissār District, Punjab, with an area of 450 square miles. It contains 117 villages, and the land revenue and cesses amounted in 1903-4 to Rs. 86,000. TOHĀNA is the head-quarters.

Sirsa Tahsil.—*Tahsil* and subdivision of Hissār District, Punjab, lying between $29^{\circ} 13'$ and $30^{\circ} 0' N.$ and $74^{\circ} 29'$ and $75^{\circ} 18' E.$, on the borders of the Bikaner desert, with an area of 1,642 square miles. The population in 1901 was 158,651, compared with 178,586 in 1891. The town of SIRSA (population, 15,800) is the head-quarters. It also contains 3 other towns and 306 villages. The land revenue and cesses amounted in 1903-4 to 2.9 lakhs. The whole of the *tahsil* is sandy, except the belt of stiff clay which forms the Ghaggar

basin, and depends for its successful cultivation on the river floods, which, below the Otu lake and dam, are distributed over the country by the Ghaggar canals. There is some irrigation in the north from the Sirhind Canal, and in the south from the Western Jumna Canal.

Dabwālī Sub-tahsil.—Sub-tahsil of the Sirsa tahsil of Hissār District, Punjab, with an area of 349 square miles. It contains 59 villages, and the land revenue and cesses amounted in 1903-4 to Rs. 96,000.

Skinner Estates.—A group of estates held by the descendants of Lieutenant-Colonel James Skinner, C.B., in the Districts of Hissār, Delhi, and Karnāl, Punjab. The area of the estates is 251 square miles in Hissār, 2.6 in Delhi, and 21.4 in Karnāl, and the total revenue of the estates in Hissār is Rs. 62,683. James Skinner, the son of a Scottish officer in the East India Company's service and a Rājput lady, was born in 1778 and received his first commission from De Boigne, the famous Savoyard adventurer, who had organized Sindhiā's brigades. After many years' service under the Marāthās, during which he was employed against the adventurer George Thomas, Skinner joined the British forces under Lord Lake in 1803, and received the command of 2,000 of Perron's Hindustāni Horse, who came over to the British after the battle of Delhi. This body served with great distinction under Skinner for thirty years, and is now represented by the 1st Lancers and 3rd Cavalry (Skinner's Horse) of the Indian Army. Rising to be a Lieutenant-Colonel in the British service, Skinner obtained large grants of land in the Delhi territory, and settled at Hānsi in Hissār District, where he died in 1841. He built St. James's Church at Delhi in fulfilment of a vow. Major Robert Skinner, his younger brother, also served under Perron and eventually entered the Company's service.

Agroha.—Ancient town in the Fatahābād tahsil of Hissār District, Punjab, situated in 29° 20' N. and 75° 38' E., 13 miles north-west of Hissār. It is said to be the original seat of the Agarwāl Baniās, and was once a place of great importance. The remains of a fort are still visible about half a mile from the existing village, and ruins and debris half buried in the soil on every side attest its former greatness. It was captured by Muhammad of Ghor in 1194, since which time the Agarwāl Baniās have been scattered over the whole peninsula. The clan comprises many of the wealthiest men in India. The present village is quite unimportant and has (1901) a population of only 1,172.

the Tomar king of Delhi. According to the authorities quoted in Tod's *Rajasthan*, Asī or Hānsi was assigned to the son of Bisaldeo Chauhān about A.D. 1000. Masūd, son of Mahmūd of Ghazni, took it, after one failure, in 1036, but, according to Firishṭa, it was recovered by the Delhi Rājā in 1043. Prithwī Rāj made considerable additions to the fort at Hānsi, converting it into an important military stronghold. It fell into the hands of Muhammad of Ghor in 1192, and was, until the foundation of Hissār, the administrative head-quarters of the neighbourhood. Hānsi was depopulated by the famine of 1783, and lay deserted until 1798, when the famous adventurer George Thomas, who had seized upon the greater part of Hariāna, fixed his head-quarters here. Thenceforth the town began to revive, and on the establishment of British rule in 1803 it was made a cantonment, where a considerable force, consisting chiefly of local levies, was stationed. In 1857 the troops mutinied, murdered all Europeans upon whom they could lay their hands, and combined with the wild Rājput tribes in plundering the country. On the restoration of order, the cantonment was given up. A high brick wall, with bastions and loopholes, surrounds the town, while the canal, which flows at its feet, contributes to its beauty by a fringe of handsome trees. Since the Mutiny, however, the houses have fallen into decay and the streets lie comparatively deserted, owing to the removal of the troops. The ruins of the fort overlook the town on the north. It contains two mosques and the tomb of Saiyid Nīāmāt Ullah, killed in resisting Muhammad of Ghor. The mosque and tombs of Kutb Jamāl-ud-dīn and his successors are on the west of the town, with the tomb of Ali Mīr Tijāra. Near by is a mosque called the Shahīd Ganj, situated probably on the scene of Masūd's first unsuccessful attempt to take Hānsi.

The municipality was created in 1867. The income during the ten years ending 1902-3 averaged Rs. 18,500 and the expenditure Rs. 18,800; and the income and expenditure in 1903-4 were Rs. 30,000 and Rs. 20,000 respectively, the chief source of income being octroi. The town has 6 cotton-ginning factories, 2 cotton-presses, and 2 combined ginning and pressing factories, and is a local centre of the cotton trade. The number of factory hands in 1904 was 1,285. It possesses a vernacular middle school and a dispensary.

Hissār Town.—Head-quarters of the District and *tahsil* of the same name, Punjab, situated in 29° 10' N. and 75° 44' E., on the Rewāri-Bhatinda branch of the Rājputāna-Mālwa

Railway; distant by rail from Calcutta 1,097 miles, from Bombay 979, and from Karāchi 819. Population (1901), 17,647. It was founded in 1356 by Fīroz Shāh Tughlak, and supplied with water by means of the canal now known as the Western Jumna Canal, and became the head-quarters of a *sarkār*. In 1408 Hissar fell into the hands of the rebels against Mahmūd Tughlak, but was recovered in 1411 by the emperor in person. It appears to have been occupied by an imperial garrison at the time of Bābar's invasion, and as the head-quarters of a *sarkār* was of considerable importance under the Mughals. The town was plundered by the Sikhs on several occasions between 1754 and 1768, and after the battle of Jind was occupied by Amar Singh of Patāla, who built a fort. Hissar was depopulated by the famine of 1783, and was taken possession of by George Thomas. The inhabitants began to return, and when it passed to the British in 1803 the town was rapidly recovering. In 1857 detachments of the Hariāna Light Infantry and 14th Irregular Cavalry stationed at Hissar mutinied, and the Collector and eleven other Europeans and native Christians were murdered. The chief relic of antiquity is the fort built by Fīroz Shāh, largely with materials taken from Hindu or Jain temples. Another interesting building is the Jahāj, apparently once a Jain temple converted into a mosque, and used as a residence by George Thomas, of whose Christian name its present title is a corruption. Near Hissar is a handsome group of tombs erected to commanders who fell in Humāyūn's campaign in Gujarāt in 1535. The trade of the town is unimportant, being confined to cotton and red pepper; but it contains a large cotton-ginning and pressing factory, which in 1904 employed 397 hands. The municipality was created in 1867. The municipal receipts and expenditure during the ten years ending 1902-3 averaged Rs. 28,700 and 29,300, and in 1903-4 amounted to Rs. 24,600 and Rs. 27,300 respectively, the chief source of income being octroi. The town possesses an Anglo-vernacular high school managed by the Educational department, and a civil hospital.

Sirsa Town.—Head-quarters of the subdivision and *tahsil* of the same name in Hissar District, Punjab, situated in 29° 32' N. and 75° 2' E., on the Rewāri-Bhatinda branch of the Rājputāna-Mālwa Railway, on the north side of a dry bed of the Ghaggar. Population (1901), 15,800. The old town of Sirsa or Sarsūti is of great antiquity, and tradition ascribes its origin to an eponymous Rājā Sāras, who built the town and fort about 1,300 years ago. Under the name

of Sarsūti, it is mentioned as the place near which Prithwī Rāj was captured after his defeat by Muhammad of Ghor in 1192; and according to Wassāf it was in the fourteenth century one of the most important towns in Upper India. It was taken by Timūr, the inhabitants fleeing before him, and is mentioned in the reign of Mubārak Shāh as the rendezvous of the expedition against the rebel fortress of Sirhind. In the reign of Sher Shāh, Sirsa became for a time the head-quarters of Rao Kalyān Singh of Bikaner, who had been driven from his country by the Rao of Jodhpur. In the eighteenth century Sirsa was one of the strongholds of the Bhattis, and was taken by Amar Singh of Patāla in 1774, but restored to the Bhattis by the agreement of 1781. The town was depopulated by the great famine of 1783, and the site was annexed in 1818 after the expedition sent against the Bhatti chief, Nawāb Zābita Khān. In 1838 Sirsa, which had lain deserted since 1783, was refounded by Captain Thoresby, who laid out the present town, which from 1858 to 1884 was the head-quarters of the Sirsa District. The ruins of Old Sirsa lie near the south-west corner of the modern town, and still present considerable remains, though much of the material has been used for building the new houses. It contains an ancient Hindu fort and tank.

The municipality was created in 1867. The income during the ten years ending 1902-3 averaged Rs. 23,300 and the expenditure Rs. 23,900; and income and expenditure in 1903-4 each amounted to Rs. 18,100, the chief source of income being octroi. The town is a centre of the export trade to Rājputāna, and is in a flourishing condition. Most of the trade is in the hands of Baniās from Rājputāna and the country to the south-east. Sirsa contains a dispensary, an Anglo-vernacular middle school maintained by the municipality, and an aided primary school for European boys.

Tohāna Town.—Town in the Fatahābād *tahsil* of Hissār District, Punjab, situated in 29° 43' N. and 75° 54' E., 40 miles north of Hissār town. Population (1901), 5,931. It was once a city of some size and importance, founded, according to tradition, by Anang Pāl, the Tomar Rājā of Delhi. Ruined during the Chauhān supremacy, it recovered its prosperity in the early Musalmān period; but having suffered many vicissitudes of plunder and famine, it has now sunk into an inferior position. It was the scene of a defeat of the Jāts by Timūr in 1398. Numerous remains in the neighbourhood testify to its former importance. The town is administered as a 'notified area,' which in 1903-4 had an income of Rs. 900.

Toshām.—Village in the Bhiwāni *tahsil* of Hissār District, Punjab, situated in $28^{\circ} 54' N.$ and $75^{\circ} 56' E.$, 23 miles south-west of Hissār town. Population (1901), 2,665. A bare rocky elevation, the highest in the District, rises abruptly above the town and desert plain to a height of 800 feet. A tank cut in the rock, half-way up the hill, forms the scene of a yearly fair, and is frequented by pilgrims, some of them from considerable distances. A *bāradārī* on a small hill near the town is called Prithwī Rāj's *kacherī*, and an inscription close by was attributed by Sir Alexander Cunningham to an Indo-Scythian king, Toshāra.

Rohtak District.—District in the Delhi Division of the Punjab, lying between $28^{\circ} 21'$ and $29^{\circ} 17' N.$ and $76^{\circ} 13'$ and $76^{\circ} 58' E.$, on the borders of Rājputāna, in the high level plain that separates the waters of the Jumna and Sutlej, with an area of 1,797 square miles. The eastern part falls within the borders of the tract formerly known as HARIĀNA. In its midst lies part of the small State of DUJĀNA. It is bounded on the north by the Jind *nizāmat* of Jind State, and by Karnāl District; on the east by Delhi, and on the south-east by Gurgaon; on the south by Pataudi State and the Rewāri *tahsil* of Gurgaon; on the south-west by territory belonging to the Nawāb of Dujāna; and on the west by the Dādrī *nizāmat* of Jind and by Hissār District. Although there is no grand scenery in Rohtak, the canals with their belts of trees, the lines of sandhills, and in the south the torrents, the depressions which are flooded after heavy rain, and a few small rocky hills give the District more diversified features than are generally met with in the plains of the Punjab. The eastern border lies low on the level of the Jumna Canal and the Najafgarh swamp. A few miles west the surface rises gradually to a level plateau, which, speaking roughly, stretches as far as the town of Rohtak, and is enclosed by parallel rows of sandhills running north and south. Beyond the western line of sandhills the surface rises again till it ends on the Hissār border in a third high ridge. The eastern line runs, with here and there an interval, down the east side of the District, and rises to some height in the Jhajjar *tahsil*. South-west of this ridge the country becomes more undulating, and the soil lighter. The south-eastern corner of the District is crossed by two small streams or torrents, the Sāhibi and Indori; these flow circuitously, throwing off a network of branches and collecting here and there after heavy rain in *jhils* of considerable size, and finally fall into the Najafgarh swamp.

Boundaries, configuration, and hill and river systems.

to have succeeded to the territories of Hissār on the death of Shāhdād Khān in 1738, handed down to his son Nawāb Kāmgar Khān a dominion which embraced the present Districts of Hissār and Rohtak, besides part of Gurgaon and a considerable tract subsequently annexed by the chiefs of Jind and Patiala. Hissār and the north were during this time perpetually overrun by the Sikhs, in spite of the combined efforts of the Bhattis and the imperial forces; but Rohtak and Gurgaon appear to have remained with Kāmgar Khān till his death in 1760. His son, Mūsa Khān, was expelled from Farrukhnagar by Sūraj Mal, the Jāt ruler of Bharatpur; and the Jāts held Jhajjar, Badli, and Farrukhnagar till 1771. In that year Mūsa Khān recovered Farrukhnagar, but he never regained a footing in the Rohtak District. In 1772 Najaf Khān came into power at Delhi, and till his death in 1782 some order was maintained. Bahādurgarh, granted in 1754 to Bahādur Khān, Baloch, was held by his son and grandson; Jhajjar was in the hands of Walter Reinhardt, the husband of Begam Sumrū of Sardhana; and Gohāna, Maham, Rohtak, and Kharkhauda were also held by nominees of Najaf Khān. The Marāthās returned in 1785, but could do little to repel the Sikh invasion; and from 1785 to 1803 the north of the District was occupied by the Rājā of Jind, while the south and west were precariously held by the Marāthās, who were defied by the strong Jāt villages and constantly attacked by the Sikhs. Meanwhile the military adventurer George Thomas had carved out a principality in Hariāna, which included Maham, Beri, and Jhajjar in the present District; his head-quarters were at Hānsi in the District of Hissār, and at Georgegarh near Jhajjar he had built a small outlying fort. In 1801, however, the Marāthās made common cause with the Sikhs and Rājputs against him, and under the French commander, Louis Bourquin, defeated him at Georgegarh, and succeeded in ousting him from his dominions. In 1803, by the conquests of Lord Lake, the whole country up to the Sutlej and the Siwāliks passed to the British Government.

Under Lord Lake's arrangements, the northern *parganas* of Rohtak were held by the Sikh chiefs of Jind and Kaithal, while the south was granted to the Nawāb of Jhajjar, the west to his brother, the Nawāb of Dādri and Bahādurgarh, and the central tract to the Nawāb of Dujāna. The latter, however, was unable to maintain order in his portion of the territories thus assigned, and the frequent incursions of Sikh and Bhatti marauders compelled the dispatch of a British officer in 1810 to bring the region into better organization. The few *parganas* thus

subjected to British rule formed the nucleus of the present District. Other fringes of territory escheated on the deaths of the Kaithal Rājā in 1818, and the chief of Jind in 1820. In the last-named year, Hissār and Sirsa were separated from Rohtak; and in 1824 the District was brought into nearly its present shape by the District of Pānīpat (now Karnāl) being made a separate charge.

Up to 1832 Rohtak was administered by a Political Agent under the Resident at Delhi; but it was then brought under the Regulations, and included in the North-Western Provinces. On the outbreak of the Mutiny in 1857, Rohtak was for a time completely lost to the British Government. The Muhammadan tribes, uniting with their brethren in Gurgaon and Hissār, began a general predatory movement under the Nawābs of Farrukhnagar, Jhajjar, and Bahādurgarh, and the Bhatti chieftains of Sirsa and Hissār. They attacked and plundered the civil station at Rohtak, destroying every record of administration. But before the fall of Delhi, a force of Punjab levies was brought across the Sutlej, and order was restored with little difficulty. The rebel Nawābs of Jhajjar and Bahādurgarh were captured and tried. The former was executed at Delhi, while his neighbour and relative escaped with a sentence of exile to Lahore. Their estates were confiscated, part of them being temporarily included in a new District of Jhajjar, while other portions were assigned to the Rājās of Jind, Patialā, and Nabha as rewards for their services during the Mutiny. Rohtak District was transferred to the Punjab Government; and in 1860 Jhajjar was broken up, part of it being added to the territory of the loyal Rājās, and the remainder united with Rohtak.

Archæo-
logy.

There are no antiquities of any note, and the history of the old sites is unknown. Excavations at the Rohtak Khokra Kot would seem to show that three cities have been successively destroyed there; the well-known coins of Rājā Samanta Deva, who is supposed to have reigned over Kābul and the Punjab about A.D. 920, are found at Mohan Bārī. Jhajjar, Maham, and Gohāna possess some old tombs, but none is of any special architectural merit; the finest are at the first place. There is an old *baoli* or stepped well at Rohtak and another at Maham: the latter has been described by the author of *Pen and Pencil Sketches*, and must have been in much better repair in 1828 than it is now. The Gaokaran tank at Rohtak and the Būā-wāla tank at Jhajjar are fine works, while the masonry tank built by the last Nawāb of Jhajjar at Chuchakwās is exceedingly handsome. The *asthal* or Jog monastery at Bohar is

the only group of buildings of any architectural pretensions in the District; the Jhajjar palaces are merely large houses on the old Indian plan.

Rohtak contains 11 towns and 491 villages. Its population The at each of the last four enumerations was: (1868) 531,118, people. (1881) 553,609, (1891) 590,475, and (1901) 630,672. It increased by nearly 7 per cent. during the last decade, the increase being greatest in the Sāmpla *tahsil*, and least in Jhajjar. It is divided into four *tahsils*—ROHTAK, JHAJJAR, SĀMPLA, and GOHĀNA—the head-quarters of each being at the place from which it is named. The chief towns are the municipalities of ROHTAK, the administrative head-quarters of the District, JHAJJAR, BERI, BAHĀDURGARH, and GOHĀNA.

The following table shows the distribution of population in 1901:—

<i>Tahsil.</i>	Area in square miles.	Number of		Population.	Population per square mile.	Percentage of variation in population between 1891 and 1901.	Number of persons able to read and write.
		Towns.	Villages.				
Rohtak . .	592	5	102	197,727	334.0	+ 8.2	7,648
Sāmpla . .	409	2	122	162,423	397.1	+ 8.4	3,810
Jhajjar . .	466	1	180	123,227	264.4	+ 3.2	3,598
Gohāna . .	336	3	78	147,295	438.4	+ 6.3	2,011
District total	1,797	11	491	630,672	350.9	+ 6.8	17,067

NOTE.—The figures for the areas of *tahsils* are taken from revenue returns. The total area is that given in the *Census Report*.

Hindus number 533,723, or 85 per cent. of the total, and Muhammadans 91,687. About 85 per cent. of the population live in villages, and the average population in each village is 1,096, the largest for any District in the Punjab. The language ordinarily spoken is Western Hindi.

The Jāts (217,000) comprise one-third of the population and own seven-tenths of the villages in the District. The great majority are Hindus, and the few Muhammadan Jāts are of a distinctly inferior type. The Hindu Rājputs (7,000) are a well-disposed peaceful folk, much resembling the Jāts in their ways; the Ranghars or Muhammadan Rājputs (27,000), on the other hand, have been aptly described as good soldiers and indifferent cultivators, whose real *forte* lies in cattle-lifting. Many now enlist in Skinner's Horse and other cavalry regiments. The Ahirs (17,000) are all Hindus and excellent cultivators. There are 9,000 Mālis and 3,000 Gūjars. The Castes and occupations.

Brāhmans (66,000) were originally settled by the Jāts when they founded their villages, and now they are generally found on Jāt estates. They are an inoffensive class, venerated but not respected. Of the commercial castes the Baniās (45,000) are the most important; and of the menials the Chamārs (leather-workers, 55,000), Chūhrās (scavengers, 23,000), Dhānaks (scavengers, 21,000), Jhīnwārs (water-carriers, 12,000), Kumhārs (potters, 13,000), Lohārs (blacksmiths, 9,000), Nais (barbers, 13,000), Tarkhāns (carpenters, 13,000), and Telis (oil-workers, 7,000). There are 17,000 Fakirs. About 60 per cent. of the population are agriculturists, and 21 per cent. industrial.

Christian missions.

The Society for the Propagation of the Gospel has a branch at Rohtak town, and in 1901 the District contained 41 native Christians.

General agricultural conditions.

The general conditions with regard to agriculture in different parts depend rather on irrigation than on differences of soil. Throughout the District the soil consists as a rule of a good light-coloured alluvial loam, while a lighter and sandier soil is found on elevations and clay soils in depressions of the land. All soils alike give excellent returns with sufficient rainfall, but, unless irrigated, fail entirely in times of drought, though the sandy soil can do with less rain than the clay or loam. The large unirrigated tracts are absolutely dependent on the autumn harvest and the monsoon rains. Roughly speaking, the part north of the railway may be classed as secure, that to the south as insecure, from famine. The whole of the soil contains salts, and saline efflorescence is not uncommon where the drainage lines are obstructed.

Chief agricultural statistics and principal crops.

The District is held almost entirely on the *pattidāri* and *bhaiyāchārā* tenures, *zamindāri* lands covering only about 8,000 acres, and lands leased from Government about 5,500 acres. The following table shows the main agricultural statistics in 1903-4, areas being in square miles:—

<i>Tahsil.</i>	Total.	Cultivated.	Irrigated.	Cultivable waste.
Rohtak . .	592	511	186	47
Sāmpla . .	409	346	122	38
Jhajjar . .	466	382	59	59
Gohāna . .	336	281	159	33
Total	1,803	1,520	526	177

Wheat is the chief crop of the spring harvest, occupying 103 square miles in 1903-4; grain occupied 141 and barley

47 square miles. In the autumn harvest the spiked and great millets are the principal staples, occupying 338 and 335 square miles respectively; cotton occupied 65 square miles, sugar-cane 31, and pulses 138. Indigo is grown to a small extent, but only for seed.

The cultivated area increased from 1,406 square miles in 1879 to 1,520 square miles in 1903-4, in which year it amounted to 84 per cent. of the total area. The increase of cultivation during the twenty years ending 1901 is chiefly due to canal extensions, and it is doubtful whether further extension is possible. Fallows proper are not practised; the pressure of population and the division of property are perhaps too great to allow them. For rains cultivation the agriculturist generally sets aside over two-thirds of his lands in the autumn and rather less than one-third in the spring, and the land gets rest till the season for which it is kept comes round again; if there is heavy rain in the hot season, the whole area may be put under the autumn crop, and in that case no spring crop is taken at all. These arrangements are due to the nature of the seasons, rather than to any care for the soil. On lands irrigated by wells and canals a crop is taken every harvest, as far as possible; the floods of the natural streams usually prevent any autumn crop, except sugar-cane, being grown on the lands affected by them. Rotation of crops is followed, but in a very imperfect way, and for the sake of the crop rather than the soil. Nothing worth mention appears to have been done in the way of improving the quality of the crops grown.

Except in the Jhajjar *tahsil*, where there is a good deal of well-irrigation, advances under the Land Improvement Loans Act were not popular till recent years; nor are advances under the Agriculturists' Loans Act common, save in times of scarcity, as the people prefer to resort to the Baniās. During the five years ending September, 1904, a total of 5.3 lakhs was advanced, including 4.9 lakhs under the Agriculturists' Loans Act. Of this sum, 3 lakhs was lent in the famine year 1899-1900.

The bullocks and cows are of a very good breed, and particularly fine in size and shape. A touch of the Hānsi strain probably pervades them throughout. The bullocks of the villages round Beri and Georgegarh have a special reputation, which is said to be due to the fact that the Nawāb of Jhajjar kept some bulls of the Nagaur breed at Chuchakwās. This breed is small, hardy, active, and hard-working, but is said to have fallen off since the confiscation of the Jhajjar State. The *zamindārs* make a practice of selling their bullocks after one

Improve-
ments in
agricul-
tural
practice.

Cattle,
horses, and
sheep.

Rs. 2,50,000 of land revenue was ultimately remitted. In 1868-9, 719,000 daily units received relief, 125,000 were employed at various times on relief works, nearly Rs. 1,35,000 was spent in alleviating the calamity, and more than Rs. 2,00,000 of revenue in all was remitted. The special feature of the relief in this famine was the amount raised in voluntary subscriptions by the people themselves, which was nearly Rs. 45,000. There is said to have been great loss of life, and nearly 90,000 head of cattle died. The next famine occurred in 1877-8. Highway robberies grew common, grain carts were plundered, and in the village of Badli a grain riot took place. No relief was, however, considered necessary, nor was the revenue demand suspended: 176,000 head of cattle disappeared, and it took the District many years to recover. Both harvests of 1895-6 were a failure, and in 1896-7 there was literally no crop in the rain-land villages. Relief operations commenced in November, 1896, and continued till the middle of July, 1897, at which time a daily average of 11,000 persons were on the relief works. Altogether, Rs. 96,300 was spent in alleviating distress, and suspensions of revenue amounted to 3.4 lakhs. The famine was, however, by no means severe; more than three-fourths of the people on relief works were menials, and large stores of fodder and grain remained in most of the villages. The famine of 1899-1900 was only surpassed in severity by the *chālisa* famine above mentioned. The spread of irrigation had, however, largely increased the area protected from famine; and, while in 1896-7 the affected area was 1,467 square miles, in 1899-1900 this had shrunk to 1,234, in spite of the greater severity of the drought. The greatest daily average of persons relieved was in the week ending March 10, 1900, when 33,632, or 9 per cent. of the population affected, were in receipt of relief. The total cost of the famine was 7.5 lakhs. The total deaths from December, 1899, to October, 1900, were 25,006, giving a death-rate of 69 as compared with the average rate of 37 per 1,000. Fever was responsible for 18,279 and cholera for 1,935 deaths. The losses of cattle amounted to 182,000.

District
subdivi-
sions and
staff.

The District is in charge of a Deputy-Commissioner, assisted by three Assistant or Extra Assistant Commissioners, of whom one is in charge of the District treasury. Each of the four *tahsils* is under a *tahsildār*, assisted by a *naib-tahsildār*.

Civil
justice and
crime.

The Deputy-Commissioner, as District Magistrate, is responsible for criminal justice. Civil judicial work is under a District Judge; and both officers are supervised by the Divisional

Judge of Delhi, who is also Sessions Judge. The District Judge has two Munsifs under him, one at head-quarters, the other at Jhajjar. There are also six honorary magistrates. The predominant form of crime is burglary.

The villages are of unusual size, averaging over 1,000 persons. They afford an excellent example of the *bhaiyāchārā* village of Northern India, a community of clansmen linked together, sometimes by descent from a common ancestor, sometimes by marriage ties, sometimes by a joint foundation of the village, with no community of property, but combining to manage the affairs of the village by means of a council of elders; holding the waste and grazing-grounds, as a rule, in common; and maintaining, by a cess distributed on individuals, a common fund to which public receipts are brought and expenditure charged.

Land
revenue
adminis-
tration.

The early revenue history under British rule naturally divides itself into two parts—that of the older tracts which form most of the area included in the three northern *tahsils*, and that of the confiscated estates which belonged before the Mutiny to the Nawābs of Jhajjar and Bahādurgarh. Thus the regular settlements made in 1838–40 included only half the present District. The earlier settlements made in the older part followed Regulation IX of 1805, and were for short terms. In Rohtak little heed was paid to the Regulation, which laid down that a moderate assessment was conducive equally to the true interests of Government and to the well-being of its subjects. The revenue in 1822 was already so heavy as to be nearly intolerable, while the unequal distribution of the demand was even worse than its burthen. Nevertheless an increase of Rs. 2,000 was levied in 1825 and Rs. 4,000 shortly after. The last summary settlement made in 1835 enhanced the demand by Rs. 20,000. The regular settlement made between 1838 and 1840 increased the assessment by Rs. 14,000. This was never paid, and the revision, which was immediately ordered, reduced it by 1½ lakhs, or 16 per cent. The progress of the District since this concession was made has been a continuing proof of its wisdom.

Bahādurgarh and Jhajjar were resumed after the Mutiny. The various summary settlements worked well on the whole, and a regular settlement was made between 1860 and 1863.

The settlement of the whole District was revised between 1873 and 1879. Rates on irrigated land varied from Rs. 2 to Rs. 2-12, and on unirrigated land from 5 annas to Rs. 1-9. Canal-irrigated land was, as usual, assessed at a 'dry' rate, plus owners' and occupiers' rates. The result of the new

assessment was an increase of $9\frac{1}{2}$ per cent. over the previous demand. The demand for 1903-4, including cesses, amounted to nearly 11 lakhs. The average size of a proprietary holding is 5 acres.

The collections of land revenue alone and of total revenue are shown below, in thousands of rupees :—

	1880-1.	1890-1.	1900-1.	1903-4.
Land revenue . .	9,69	9,50	7,43	8,15
Total revenue . .	11,09	11,38	10,37	11,34

Local and
municipal.

The District contains five municipalities, ROHTAK, BERI, JHAJJAR, BAHĀDURGARH, and GOHĀNA; and ten 'notified areas,' of which the most important are MAHAM, KALĀNAUR, MUNDLĀNA, and BUTĀNA. Outside these, local affairs are managed by a District board, whose income amounted in 1903-4 to Rs. 1,24,000. The expenditure in the same year was Rs. 1,22,000, the principal item being public works.

Police and
jails.

The regular police force consists of 433 of all ranks, including 63 municipal police, under a Superintendent, who is usually assisted by 2 inspectors. The village watchmen number 702. The District has 10 police stations, 4 outposts, and 17 road-posts. Three trackers and three camel *sowārs* now form part of the ordinary force. The District jail at head-quarters has accommodation for 230 prisoners.

Education.

The standard of education is below the average, though some progress has been made. Rohtak stands twenty-sixth among the twenty-eight Districts of the Province in respect of the literacy of its population. In 1901 only 2.7 per cent. of the population (5 males and 0.1 females) could read and write. The number of pupils under instruction was 2,396 in 1880-1, 3,380 in 1890-1, 5,097 in 1900-1, and 5,824 in 1903-4. In the last year the District possessed 9 secondary and 65 primary (public) schools and 2 advanced and 42 elementary (private) schools, with 211 girls in the public and 8 in the private schools. The Anglo-vernacular school at Rohtak town with 262 pupils is the only high school. The other principal schools are two Anglo-vernacular middle schools supported by the municipalities of Jhajjar and Gohāna, and 6 vernacular middle schools. The total expenditure on education in 1903-4 was Rs. 44,000, chiefly derived from District funds; fees provided nearly a third, and municipal funds and Provincial grants between them a fifth, of the total expenditure.

by sand ridges which often rise to a considerable height. On the east the low-lying land used to be regularly flooded by the Sāhibi and Indori streams, and large lakes then formed in the depressions; but of recent years the volume of these torrents has diminished, and the country rarely remains flooded for any considerable period. The north of the *tahsil* is a continuation of the plateau of Rohtak and Sāmpla, while in the south a few low rocky eminences lend variety to the landscape.

Gohāna Tahsil.—*Tahsil* of Rohtak District, Punjab, lying between $28^{\circ} 57'$ and $29^{\circ} 17'$ N. and $76^{\circ} 29'$ and $76^{\circ} 52'$ E., with an area of 336 square miles. The population in 1901 was 147,295, compared with 138,555 in 1891. It contains the three towns of GOHĀNA (population, 6,567), its head-quarters, BARAUDA (5,836), and BUTĀNA (7,509); and 78 villages, including MUNDLĀNA (5,657). The land revenue and cesses amounted in 1903-4 to 2.6 lakhs. The *tahsil* is flat and well wooded, and ample means of irrigation are available.

Bahādurgarh.—Town in the Sāmpla *tahsil* of Rohtak District, Punjab, situated in $28^{\circ} 41'$ N. and $76^{\circ} 56'$ E., 18 miles west of Delhi on the Rohtak road, and on the Southern Punjab Railway. Population (1901), 5,974. The name of the town was originally Sharafābād. It was given in *jāgīr* to Bahādur Khān and Tāj Muhammad, Baloch chiefs of Farrukhnagar, in 1754, and its name changed to Bahādurgarh. The *jāgīr* was resumed in 1793 by Sindhia, and in 1803 the town and the surrounding villages were bestowed by Lord Lake on Ismail Khān, brother of the Nawāb of Jhajjar. The estate was confiscated in 1857 owing to the disloyalty of the chief, Bahādur Jang. The municipality was created in 1873. The income and expenditure during the ten years ending 1902-3 averaged Rs. 6,600. Income and expenditure in 1903-4 each amounted to Rs. 6,400, the income being chiefly from octroi. The town is of no commercial importance. The municipality maintains a vernacular middle school and a dispensary.

Baraуда (Baroda).—Town in the Gohāna *tahsil* of Rohtak District, Punjab, situated in $29^{\circ} 9'$ N. and $76^{\circ} 37'$ E., on the Butāna branch of the Western Jumna Canal. Population (1901), 5,836.

Beri.—Town in the District and *tahsil* of Rohtak, Punjab, situated in $28^{\circ} 42'$ N. and $76^{\circ} 35'$ E., 15 miles south of Rohtak town, on the direct road from Delhi to Bhiwāni. Population (1901), 9,723. It formed part of the estate of

turesque place with many interesting ruins, including a fine *baoli* or stepped well built by a mace-bearer of Shāh Jahān. It has a vernacular middle school.

Mundlāna (*Mandlāna*).—Village in the Gohāna *tahsil* of Rohtak District, Punjab, situated in $29^{\circ} 12'$ N. and $76^{\circ} 50'$ E. Population (1901), 5,657. It is administered as a 'notified area.'

Rohtak Town.—Head-quarters of the District and *tahsil* of the same name, Punjab, situated in $28^{\circ} 54'$ N. and $76^{\circ} 35'$ E., on the Southern Punjab Railway, 44 miles north-west of Delhi; distant by rail from Calcutta 1,000 miles, from Bombay 1,026, and from Karāchi 863. Population (1901), 20,323, including 10,404 Hindus and 9,916 Muhammadans. It is plausibly identified with the Rauhitaka or Rauhita of the *Rājatarangini* and of Alberūni; but tradition avers that its ancient name was Rohtāsgarh or 'the fort of Rohtā,' a Ponwār Rājā, and points to the mound called the Khokra Kot as the site of the old town. It is also said that Muhammad of Ghor destroyed the town soon after it had been rebuilt by Prithwī Rāj in 1160, but it is not mentioned by the earlier Muhammadan historians. A colony of Shaikhs from Yemen are said to have built a fort; and the Afghāns of Bīrahma, an ancient site close by, also settled in the town, which became the capital of a fief of the Delhi kingdom. Kai Khusrū, the grandson and heir of Balban, was enticed from Multān by Kaikubād and put to death here about 1286; and in 1410 Khizr Khān, the Saiyid, besieged Idrīs Khān in Rohtak fort, and took it after a six months' siege. After the decline of the Mughal power Rohtak, situated on the border line between the Sikh and Marāthā powers, passed through many vicissitudes, falling into the hands of one chieftain after another. It became the head-quarters of Rohtak District in 1824, and was plundered in the Mutiny of 1857.

The municipality was created in 1867. The income during the ten years ending 1902-3 averaged Rs. 24,900, and the expenditure Rs. 24,400. The income in 1903-4 was Rs. 25,000, chiefly derived from octroi; and the expenditure was Rs. 23,600. The town is an important trade centre; and four factories for ginning cotton and one for ginning and pressing have recently been established. The number of factory hands in 1904 was 279. Muslin turbans interwoven with gold and silver thread and a form of muslin known as *tanzeb* are produced. The Anglo-vernacular high school is managed by the Educational department.

Sānghi.—Village in the District and *tahsil* of Rohtak, Punjab, situated in $29^{\circ} 1'$ N. and $76^{\circ} 41'$ E. Population (1901), 5,126. It is administered as a 'notified area.'

Boun-
daries, con-
figuration,
and hill
and river
systems.

Gurgaon District.—District in the Delhi Division of the Punjab, lying between $27^{\circ} 39'$ and $28^{\circ} 33'$ N. and $76^{\circ} 18'$ and $77^{\circ} 34'$ E., in the extreme south-east of the Province, with an area of 1,984 square miles. It stretches towards the outlying hills of the Rājputāna table-land, and its southern part belongs geographically to that part of Northern Rājputāna known as Mewāt or the country of the Meos. It is bounded on the north by the States of Dujāna and Pataudi, and the Districts of Rohtak and Delhi; on the east the river Jumna separates it from Bulandshahr and Aligarh in the United Provinces; on the south it marches with the Muttra District of the United Provinces and the State of Bharatpur; on the west it is bounded by territories belonging to the States of Alwar, Jaipur, and Nābha. The surface presents a considerable variety of contour. Two low rocky ranges, continuations of the Arāvalli chain, enter its border from the south, and run northward in a bare and treeless mass towards the plain country. The northern plain falls into two natural divisions, divided by the western range. Eastwards, the valley between the two ridges lies wide and open throughout; and below the escarpment of the eastern ridge an alluvial level extends unbroken to the banks of the Jumna. Immediately at the foot of the uplands lie a series of undulating hollows, which during the rains become extensive swamps. West of the western range lies the Rewāri *tahsil*, consisting of a sandy plain, dotted with isolated hills. Though naturally dry and sterile, it has become, under the careful hands of its Ahir inhabitants, a well-cultivated tract. Numerous torrents carry off the drainage from the hills, while large pools or *jāls* collect the water brought down by these torrents.

Geology.

The greater part of the District is covered by alluvium, but outcrops of rocks occur in numerous small hills and ridges. These are outliers of the slates and quartzites (Alwar quartzite) of the Delhi system. The slate is usually a fissile clay slate, and is quarried near Rewāri. There are brine wells in the Sultānpur *mahāl* and sulphur springs at Sohna¹.

Botany.

The flora is mainly that of North-Eastern Rājputāna, and in the south-west includes several desert forms. Trees are few, except where planted; but on the hills that extend

¹ Hackett, 'Geology of the Arāvalli Region,' *Records, Geological Survey of India*, vol. xiv, part iv.

into the District from the Arāvalli ranges, *gugal* (*Borwellia serrata*), yielding frankincense, occurs, and also an acacia yielding catechu; while the south-east portion is characterized by the *dhak* or *dhao* (*Anogeissus pendula*). The Jumna valley and the north-eastern corner belong botanically to the Upper Gangetic plain.

The days when tigers abounded in Gurgaon on the wooded Fauna. banks of the Jumna are long since gone by, though now and then a straggler from the Alwar hills is seen. The striped hyena is found only in the neighbourhood of the hills. Leopards are not uncommon. Wolves, foxes, and jackals are common in all parts. The sacred monkey is found in great numbers about Hodal, and there are also a few in Rewāri and Gurgaon. Wild hog frequent the low hills near Bhaundī and Sohna and the lowlands of the Jumna. Both antelope and 'ravine deer' (Indian gazelle) are fairly plentiful, the former in the hilly and sandy parts, the latter in the lowlands. The *nīlgai* is also found in the southern parts of the Rewāri *tahsil*. Hog deer are occasionally met with in the lowlands of the Jumna.

Both heat and cold are less extreme than in the Punjab proper, though near the hill ranges and in the Firozpur-Jhirka valley the radiation from the rocks makes the heat intense. Fever is the chief cause of mortality, but the District is the least unhealthy of the Division, Simla excepted. The flooded tracts near Nūh are particularly malarious, and fever has come with the Agra Canal into the high plain. Climate and temperature.

The average rainfall varies from 22 inches at Rewāri to 26 inches at Gurgaon. Of the total in the latter place, $23\frac{1}{2}$ inches fall in the summer months and $2\frac{1}{2}$ in the winter. The uncertain nature of the monsoon is the most marked feature of the returns, the precipitation having varied from 48 inches at Nūh in 1885-6 to 0·1 inch at Hattin in 1899-1900. Rainfall.

Gurgaon, with the rest of the territory known as MEWĀT, History. formed in early times part of an extensive kingdom ruled over by Rājputs of the Jaduvansi or Jādon tribe. The Jādon power was broken by Muhammad of Ghor in 1196; but for two centuries they sturdily resisted the Muhammadan domination, and the history of the District is a record of incursions of the people of Mewāt into Delhi territory and of punitive expeditions undertaken against them. Under Firoz Shāh III the Jādons were converted to Islām; and Bahādur Khān or Bahādur Nahar took a prominent part in the intestine struggles that followed the invasion of Timūr, founding the family of the Khānzādas, members of which ruled Mewāt

made them rulers of Mewāt. It is possible that they are akin to the Meos, some of whom profess to have been formerly Khānzādas; if so, they may be the representatives of the upper, as the Meos are of the lower, classes of the aboriginal population. The Mālīs (market-gardeners) number 11,000. The Saiyids (3,000) and Balochs (2,000) bear a bad name as indolent and thriftless cultivators, and swell the returns of crime far beyond their just proportion. The criminal class of Mīnās (800) are notorious for their thieving propensities. The chief of the commercial tribes are the Baniās (37,000). Of the menial tribes, the most important are the Chūhrās (scavengers, 21,000), Jhīnwars (water-carriers, 12,000), Kumhārs (potters, 16,000), Lohārs (blacksmiths, 7,000), Nais (barbers, 14,000), Kassābs (butchers, 17,000), Tarkhāns (carpenters, 13,000), and Telīs (oilmen, 7,000). There are 26,000 Fakīrs. About 60 per cent. of the population are dependent on agriculture.

Christian missions.

The Society for the Propagation of the Gospel Mission has branches at Gurgaon and Rewāri, with dispensaries at the latter place and at Palwal. In 1901 the District contained 221 native Christians.

General agricultural conditions.

The Jumna in Gurgaon, as elsewhere, is fringed by a strip of alluvial land, the *khādar*, which leads to the broad level plain, known as the *bāngar*. Here the soil is almost uniformly a good loam. Towards the hills the plain sinks into a shallow depression of clayey soil, the *ḍabar*, which receives the drainage of the higher ground. West of the hills the ground is broken by rocky knolls and sandhills, while even in the level parts the soil is much lighter than that of the *bāngar*.

Chief agricultural statistics and principal crops.

The District is held almost entirely on the *pattidāri* and *bhāiyāchārū* tenures, though *samīndāri* lands cover 9,000 acres.

The area for which details are available from the revenue records of 1903-4 is 1,941 square miles, as shown below:—

<i>Tahsil.</i>	Total.	Cultivated.	Irrigated.	Cultivable waste.
Gurgaon . . .	413	299	43	37
Palwal . . .	382	314	130	40
Firozpur . . .	317	259	49	7
Nūh . . .	403	329	72	23
Rewāri . . .	426	365	106	23
Total	1,941	1,366	400	130

The chief crops of the spring harvest are gram and barley, which occupied 71 and 167 square miles respectively in

1903-4. Wheat occupied 68 square miles. In the autumn, spiked millet is by far the most important crop, occupying 347 square miles. Next come pulses (275 square miles), great millet (111 square miles), and cotton (86 square miles). There is little sugar-cane (only 12 square miles), and practically no rice.

The cultivated area has increased but slightly since the settlement of 1872-83, being 1,566 square miles in 1903-4 as compared with 1,555 square miles at settlement; and as four-fifths of the total area is now under cultivation, no great extension is to be expected, or could be possible without unduly reducing the area utilized for grazing. Little attention is paid to any regular course of cropping. Unmanured land is generally cultivated only for one harvest, and the rest it gets during the other harvest is thought sufficient. Great millet is not sown in the same land two years in succession. Cotton is not sown after spiked millet. In all other cases, in deciding what crop to sow, regard is paid to the kind of soil and amount of rainfall, without any consideration as to what the previous crop was. Advances for constructing wells under the Land Improvement Loans Act are fairly popular, Rs. 67,000 having been advanced during the five years ending 1904. During the same period 2.8 lakhs was advanced under the Agriculturists' Loans Act, for the purchase of bullocks and seed.

As might be expected from the small proportion of land uncultivated, grazing is scarce, and Gurgaon is not a great cattle-breeding District. A cattle fair is held at Rewāri. The horses and sheep are of no special importance. The District board has two horse and two donkey stallions. Large numbers of goats are grazed on the hills; they are frequently owned by butchers, who make them over to shepherds on condition of receiving a certain share, generally a half, of the increase.

Of the total area cultivated in 1903-4, 400 square miles, or 25 per cent., were classed as irrigated. Of this area, 222 square miles were irrigated from wells, 152 from canals, and 25 from streams, tanks, and embankments. The District has 9,208 wells in use, all worked by bullocks on the rope-and-bucket system, besides 3,511 unbricked wells, lever wells, and water-lifts. Canal-irrigation is entirely from the AGRA CANAL, which traverses the eastern portion of the District. The third main source of irrigation is the collection of the water of the hill torrents by means of embankments. These are maintained by the District board, and the total area irrigated from them

Improvements in agricultural practice.

Cattle, horses, sheep, and goats.

Irrigation.

doubled in the twenty years ending 1901. On the other hand, owing to the diminution of water in the Sāhibi, Indori, and Landoha streams, the low-lying flooded area has considerably decreased.

Forests.

The only forests are about one square mile of unclassed forest and Government waste under the control of the Deputy-Commissioner. As a whole, the District is not well wooded, and some parts, such as the low-lying tracts in the Nūh *tahsīl*, are extremely bare. In Rewāri the tamarisk is especially common, and the ownership of these trees in waste lands and along village roads is often distinct from that of the soil. Palwal is by far the best wooded *tahsīl*, and most of the Jāt villages in it reserve a certain portion of their area from the plough.

Minerals.

The Sultānpur salt sources lie in six villages, five in this District and one in Rohtak. The salt is made entirely from natural brine, 43 wells of which were worked in this District in 1903-4. The brine is about 26 feet below the surface and 15 feet deep, and the supply seems inexhaustible, as some of the works have existed for over 200 years. The salt, known as Sultānpurī, is, however, of poor quality, and the demand for it is dying out. Saltpetre is extracted from the earth of old sites and refined at Hodal. Iron ore exists in the hills, but its manufacture has long been abandoned owing to the scarcity of fuel. Traces of copper exist and mica is occasionally extracted. Plumbago has been found, but is too impure to be of any commercial value. A little gold is sometimes washed out of the sand of the hill torrents. Excellent slates are quarried in the neighbourhood of Rewāri.

Arts and manufac- tures.

Coarse cotton and woollen fabrics are made in the villages. Muslin is woven at Rewāri, but there is little trade in it. The chief industry is the brass manufacture of Rewāri; the greater part of the out-turn consists of cooking utensils, but articles decorated with chasing, engraving, and parcel tinning are also produced for export. Glass bangles are made at Sohna, shoes at Jharsa, Sohna, and other places, and iron vessels at Firozpur-Jhirka, and at Dārāpur and Tānkri in the Rewāri *tahsīl*. There are two factories for ginning cotton, one at Palwal and one at Hodal, employing 268 hands in 1904. There is an out-still for the distillation of spirit at Firozpur-Jhirka.

Commerce and trade.

Trade centres in the town of Rewāri, which ranks as one of the chief emporiums in the Punjab. Its merchants transact a large part of the commerce between the States of Rājputāna and Northern India. Salt from the Sāmbhar Lake and iron

are the principal imports; while sugar, grain, and English piece-goods are the staple exports. Hardware of brass, coated with white metal, is also largely exported. The District produces cereals and pulses considerably beyond its needs for home consumption; and of late years, owing to the extension of railway communication, a steady export trade in grain has sprung up. Nūh, Firozpur-Jhirka, Palwal, Hattin, Nagina, Punahāna, Hodal, Hasanpur, and Farrukhnagar are the chief marts (after Rewāri) for country produce, the last-named being also the market for the Sultānpurī salt.

The Rājputāna-Mālwa Railway from Delhi to Ajmer crosses the District with a branch line to Farrukhnagar, and the Bhatinda line leaves it at Rewāri, which is an important junction. The Agra-Delhi chord of the Great Indian Peninsula Railway, opened in 1904, runs through the east, and the Rewāri-Phulera line through the Rewāri *tahsil*. Railways and roads.

The grand trunk road from Delhi to Agra traverses the Palwal *tahsil*, and there is a metalled road from Gurgaon to Sohna (15 miles), which is to be carried 6 miles farther on to Nūh. A metalled road also runs from Firozpur-Jhirka through Nagauna into the State of Alwar. The roads of greatest mercantile importance are, however, still unmetalled, very heavy, and difficult to traverse in the rains. The total length of metalled roads is 81 miles, and of unmetalled roads 509 miles. Of these, 30 miles of metalled roads are under the Public Works department, and the rest are maintained from Local funds. The Jumna is navigable by country craft throughout its course, and is crossed by eight ferries.

As might be expected in a District so largely dependent, until lately, on the rainfall, Gurgaon suffered severely in all the famines that have visited the Punjab. The *chāltsa* famine of 1783-4 was very disastrous; and in the famines of 1833-4 and 1837-8 a number of estates were deserted, partly on account of high assessments and partly from too stringent collection of revenue. The effects of the famines of 1860-1 and 1868-9 were greatly mitigated by the relief afforded by Government. In the latter year, the first for which we have full reports, 344,527 daily units were relieved, and 15,324 persons were employed on works, with a total expenditure of Rs. 11,139. The famine of 1877-8, in conjunction with a new and excessive assessment of land revenue and an unsympathetic revenue administration, badly crippled the District for some time; the maximum number on relief on any one day was 2,155, while 313 deaths from starvation were reported, and 150,000 head Famine.

refused on the ground that proprietors whose revenue had just been raised must be in a position of affluence and therefore able to pay in a bad year as well as in a good. The result was widespread distress, and collection of the revenue in full proved impossible. Moreover, it was not until 1882 that counsels of leniency prevailed, and by that time pestilence and famine had stamped upon the people an impress of poverty which years of prosperity could hardly remove. The assessment was lowered by nearly 8 per cent. for a term of seven years, and permanently by 4 per cent. At the expiry of the term in 1889 the larger reduction was made permanent; and though the years 1890-5 were years of plenty, they were overshadowed by the famine lustrum that followed. The District came under resettlement in 1903. The average assessment on 'dry' land is Rs. 1-0-6 (maximum, Rs. 1-12; minimum, 9 annas), and on 'wet' land Rs. 2-8 (maximum, Rs. 3-8; minimum, Rs. 1-8). The demand, including cesses, in 1903-4 was nearly 14 lakhs. The average size of a proprietary holding is 3.7 acres.

The collections of land revenue alone and of total revenue are shown below, in thousands of rupees :—

	1880-1.	1890-1.	1900-1.	1903-4.
Land revenue .	12.47	11.96	10.12	11.31
Total revenue .	13.68	13.72	12.97	14.32

The District contains six municipalities, REWĀRI, FARRUKH-Local and NAGAR, PALWAL, FĪROZPUR-JHIRKA, SOHNA, and HODAL, municipal. besides four 'notified areas.' Outside these, local affairs are managed by a District board, whose income amounted in 1903-4 to Rs. 1,24,000. Its expenditure in the same year was Rs. 1,46,000, the principal item being public works.

The regular police force consists of 520 of all ranks, including Police and 117 municipal police, under a Superintendent, who is usually jails. assisted by two inspectors. The village watchmen number 1,428. The District contains 15 police stations, one outpost, and 13 road-posts. There is no jail in the District, and the convicts are sent to Delhi District jail. The Mīnās and Bauriās are proclaimed under the Criminal Tribes Act, and 908 were on the register in 1901.

Gurgaon stands twenty-seventh among the twenty-eight Education. Districts of the Province in respect of the literacy of its population. In 1901 the proportion of literate persons was 2.6 per

cent. (4.9 males and 0.1 females). The number of pupils under instruction was 3,199 in 1880-1, 4,696 in 1890-1, 5,139 in 1900-1, and 5,563 in 1903-4. In the last year the District possessed 7 secondary and 108 primary (public) schools, and 17 elementary (private) schools, the number of girls being 347 in the public and 105 in the private schools. Of the public schools, 11 were supported by municipalities and 18 received a grant-in-aid, the remainder being maintained by the District board. The only high school is an Anglo-vernacular municipal school at Rewāri, managed by the Educational department. The special schools include two for low-caste boys, and one industrial school for boys and another for girls. To encourage education among the criminal tribe of Mīnās, stipends of from R. 1 to Rs. 3 per month are offered to boys of this class to support them at school. The total expenditure on education in 1903-4 amounted to Rs. 51,000, of which Government contributed Rs. 2,000, municipalities Rs. 15,000, District funds Rs. 25,000, and fees Rs. 8,000.

Hospitals
and dis-
pensaries.

Besides the Gurgaon dispensary the District has eight out-lying dispensaries. At these institutions 77,889 out-patients and 1,716 in-patients were treated in 1904, and 3,707 operations were performed. The expenditure was Rs. 24,000, of which Rs. 13,000 was derived from Local funds and the greater part of the remainder from municipal funds. The Society for the Propagation of the Gospel has a dispensary in charge of a lady doctor at Rewāri, and another at Palwal.

Vaccina-
tion.

The number of successful vaccinations in 1903-4 was 23,697, or 31.76 per 1,000 of the population. Vaccination is compulsory only in Rewāri.

[J. Wilson, *Codes of Tribal Custom of Twenty-one Tribes in the Gurgaon District* (1882); D. C. J. Ibbetson, *District Gazetteer* (1884); F. C. Channing and J. Wilson, *Settlement Report* (1882).]

Gurgaon Tahsil.—*Tahsil* of Gurgaon District, Punjab, lying between 28° 12' and 28° 33' N. and 76° 42' and 77° 15' E., with an area of 413 square miles. The population in 1901 was 125,760, compared with 112,390 in 1891. It contains the three towns of GURGAON (population, 4,765), the headquarters, SOHNA (6,024), and FARRUKHNAGAR (6,136); and 207 villages. The land revenue and cesses amounted in 1903-4 to 2.5 lakhs. At annexation the area covered by the present *tahsil* was occupied by the *parganas* of Farrukhnagar held by the Nawāb of Farrukhnagar, Jhārsa held by Begam Sumrū, and the greater part of Bahora and Sohna, held by General

Nūh (*Noh*).—*Tahsil* of Gurgaon District, Punjab, lying between $27^{\circ} 53'$ and $28^{\circ} 20'$ N. and $76^{\circ} 51'$ and $77^{\circ} 19'$ E., with an area of 403 square miles. It is bounded on the west by the State of Alwar. The population in 1901 was 145,931, compared with 131,593 in 1891. It contains the village of Nūh, the head-quarters, and the town of Hattin (4,301), with 257 villages. The land revenue and cesses amounted in 1903-4 to 2.9 lakhs. Of the *parganas* which make up the greater part of the present *tahsil*, Nūh was brought under British rule in 1808, Hattin in 1823, and Taoru (which had been assigned to Bharatpur) after the Bharatpur War in 1826. The high plateau of Taoru is separated from the low-lying tract round Nūh by a low range of hills. To the east the country is undulating and water collects in the hollows.

Rewāri Tahsil (*Rivāri*).—*Tahsil* of Gurgaon District, Punjab, lying between $28^{\circ} 5'$ and $28^{\circ} 26'$ N. and $76^{\circ} 18'$ and $76^{\circ} 52'$ E., with an area of 426 square miles. It is almost entirely detached from the rest of the District, and is bounded on three sides by Native States. The isolated *pargana* of Shāhjahānpur, situated to the south in Alwar territory, is also included in this *tahsil*. The population in 1901 was 169,673, compared with 161,332 in 1891. It contains the town of Rewāri (population, 27,295), the head-quarters, and 290 villages. The land revenue and cesses amounted in 1903-4 to 3.2 lakhs. Rewāri formed during the eighteenth century a semi-independent principality under a family of Ahir chiefs. On the cession of the country to the British, the revenue was first farmed by the Rājā of Bharatpur and then by the Ahir chief of the day. It was taken over by the Government in 1808. Shāhjahānpur belonged to the Chauhān Rājputs until the Haldias, dependents of Jaipur, wrested it from them in the eighteenth century. It lapsed to the Government in 1824. The *tahsil* consists of a sandy plain, the monotony of which is varied towards the west by irregular rocky hills of low elevation. The Kasauti on the extreme west and the Sāhibt on the east are two torrents which contribute largely to the fertility of the land along their banks. In other parts there is copious well-irrigation.

Farrukhnagar.—Town in the District and *tahsil* of Gurgaon, Punjab, situated in $28^{\circ} 27'$ N. and $76^{\circ} 50'$ E., on a branch of the Rājputāna-Mālwa Railway, 14 miles from Gurgaon. Population (1901), 6,136. It is the *dépôt* for the salt extracted from saline springs in the neighbourhood, but the industry has greatly declined of late years and threatens

soon to be extinct altogether. Farrukhnagar was founded by a Baloch chief, Faujdār Khān, afterwards Dalel Khān, who was made governor by the emperor Farrukh Siyar. He assumed the title of Nawāb in 1732, and the Nawābs of Farrukhnagar played an important part in the history of the tract for the next seventy years. Farrukhnagar was captured by the Jāts of Bharatpur in 1757, but recovered in 1764. On annexation the Nawābs were confirmed in their principality, but it was confiscated in 1858 for the complicity of the reigning chief in the Mutiny. The chief buildings are the Delhi Gate, the Nawāb's palace, and a fine mosque, all dating from the time of Faujdār Khān; also a large octagonal well belonging to the period of Jāt occupation. The municipality was created in 1867. The income during the ten years ending 1902-3 averaged Rs. 6,400, and the expenditure Rs. 5,900. The income in 1903-4 was Rs. 6,800, chiefly derived from octroi; and the expenditure was Rs. 10,600. It maintains a dispensary.

Firozpur-Jhirka.—Head-quarters of the *tahsil* of the same name in Gurgaon District, Punjab, situated in 27° 47' N. and 76° 58' E., 50 miles due south of Gurgaon. Population (1901), 7,278. Formerly a trade centre for cotton, it has been ruined by the absence of railway communications. It has an out-still for the distillation of spirit. It is said to have been founded by Firoz Shāh III as a military post to control the Mewātis. From 1803 to 1836 it was the seat of the Nawābs of Firozpur, to whom the present *tahsil* had been granted on annexation. The municipality was created in 1867. The income and expenditure during the ten years ending 1902-3 averaged Rs. 7,400 and 7,100 respectively. The income in 1903-4 amounted to Rs. 6,600, chiefly derived from octroi, and the expenditure to Rs. 7,800. It maintains a vernacular middle school and a dispensary.

Gurgaon Town.—Head-quarters of the District and *tahsil* of the same name, Punjab, situated in 28° 29' N. and 77° 2' E., 3 miles from Gurgaon station on the Rājputāna-Mālwa Railway. Population (1901), 4,765. It is of no commercial or historical importance. Gurgaon is also known as Hidāyatpur, the village where at annexation a cavalry cantonment was located in order to watch Begam Sumrū's troops at Jhārsa. The civil head-quarters of the District were transferred here in 1816. Its name is taken from the neighbouring village of Gurgaon-Masāni, where there is a temple of Sitla, goddess of small-pox, which is visited annually by 50,000 or 60,000 people.

Boun-
daries, con-
figuration,
and hill
and river
systems.

Delhi District (*Dehli* or *Dilli*).—District in the Delhi Division of the Punjab, lying between $28^{\circ} 12'$ and $29^{\circ} 14'$ N. and $76^{\circ} 48'$ and $77^{\circ} 31'$ E., with an area of 1,290 square miles. The name should be written Dilli or Dhili, and is said to be derived from an eponymous Rājā Dilu or Dhilu. The District is bounded on the north by Karnāl; on the east by the river Jumna, which separates it from the Districts of Meerut and Bulandshahr in the United Provinces; on the south by Gurgaon; and on the west by Rohtak. The northern portion, like most of the alluvial plains of Upper India, is divided into the *khādar*, or riverain, a strip of land adjoining the Jumna; and the drier and more sandy uplands, known as the *bāngar*. Though monotonous in appearance, this latter tract is well wooded, and, being traversed by the Western Jumna Canal, is fertile in the extreme. A prolongation of the Arāvalli Hills enters Delhi from Gurgaon on the southern border, and immediately expands into a rocky table-land, about 3 miles in breadth, running in a north-easterly direction nearly across the District. Ten miles south of the city the range divides into two branches, one of which, turning sharply to the south-west, re-enters the borders of Gurgaon; while the other, continuing its northerly course as a low, narrow range of sandstone, passes west of Delhi city, where it forms the historic Ridge, and finally terminates on the right bank of the Jumna. The table-land nowhere attains an elevation of more than 500 feet above the lowlands at its base; but its surface consists of barren rock, too destitute of water for the possibility of cultivation, even in the few rare patches of level soil. The Jumna, before reaching the borders of the District, has been so completely drained of its waters for the two older canals which it feeds, that it forms only a narrow stream, fordable at almost any point, except during the rains.

Geology.

The greater part of the District lies on the alluvium; but the small hills and ridges, which abound to the south of Delhi, consist of outliers of Alwar quartzite belonging to the Delhi system of the transition group of Peninsular India. The Ridge at Delhi is composed of the same rock.

Botany.

The natural vegetation is that of the drier parts of the Upper Gangetic plain, with an element akin to that of North-East Rājputāna, while traces of an ancient Deccan flora are found on and near the low spur which ends in the ridge at Delhi. The mango and other sub-tropical species are cultivated in gardens and along canals and roadsides; but large trees, except where planted, are comparatively scarce, and the kinds

that reproduce themselves spontaneously are probably, in most cases, not natives of the District.

Wolves are not uncommon and leopards are occasionally ^{Fsuna.} met with. Hog are plentiful all along the banks of the Jumna. Antelope are becoming scarce, while *nilgai* and hog deer are practically extinct. 'Ravine deer' (Indian gazelle) are found in the low hills.

The cold season is much like that of the Punjab proper, but ends a fortnight sooner than at Lahore. Hot west winds blow steadily till the end of June, when plentiful rain is expected. October brings cool nights and the beginning of the feverish season, which is always very unhealthy. The average mean temperature of January is 57°, of April 85°, of June 97°, and of September 87°. ^{Climate and temperature.}

The average rainfall varies from 21½ inches at Ballabgarh ^{Rainfall.} to 28 at Delhi. Of the rainfall at the latter place 25 inches fall in the summer months, and 3 in the winter. The greatest rainfall recorded during the twenty years ending 1901 was 48 inches at Delhi in 1884-5, and the least one-fifth of an inch at Mahrauli in 1896-7.

The history of the District is the history of DELHI ^{History.} CITY, of which it has from time immemorial formed a dependency. Even the towns of SONEPAT, BALLABGARH, and FARĪDĀBĀD hardly possess local histories of their own, apart from the city, in or around which are all its great antiquities.

The tract conquered by the East India Company in 1803 included a considerable strip to the west of the Jumna both north and south of the Mughal capital. A few native princes, however, still held independent estates within the Delhi territory, the principal in the present District being the Rājā of Ballabgarh. As early as 1819 a District of Delhi was regularly constituted. It included a part of the present Rohtak District; and in 1832 the administration of the Delhi territory, nominally as well as actually, was placed in the hands of the East India Company. The territory continued to form part of the North-Western (now the United) Provinces till the Mutiny of 1857.

On the outbreak of the Mutiny the whole District passed into the hands of the rebels; and though communications with the Punjab were soon restored, and the northern *parganas* recovered, it was not till after the fall of Delhi city that British authority could reassert itself in the southern portion. When the final suppression of the Mutiny enabled the work of reconstruction to proceed, the District was transferred to the

Punjab. At the same time the territories of the insurgent Rājā of Ballabgarh, who had been executed for rebellion, were confiscated and added as a new *tahsil* to the District; while the outlying villages of the Doāb, hitherto belonging to Delhi, and known as the eastern *pargana*, were handed over to the North-Western Provinces.

The
people.

The District contains 4 towns and 714 villages. The population at the last enumerations was: (1881) 643,515, (1891) 638,689, and (1901) 689,039. It increased by 7·8 per cent. during the last decade, the increase being greatest in the Delhi *tahsil* (8·9) and least in Ballabgarh (5·9). It is divided into the three *tahsils* of DELHI, SONEPAT, and BALLABGARH, the head-quarters of each being at the place from which it is named. The chief towns are the municipalities of DELHI, the head-quarters of the District, SONEPAT, BALLABGARH, and FARĪDĀBĀD. The following table shows the chief statistics of population in 1901:—

<i>Tahsil.</i>	Area in square miles.	Number of		Population.	Population per square mile.	Percentage of variation in population between 1891 and 1901.	Number of persons able to read and write.
		Towns.	Villages.				
Delhi . . .	449	1	243	339,008	836·8	+ 8·9	21,854
Sonepat . . .	455	1	224	203,338	446·9	+ 7·3	6,445
Ballabgarh . .	385	2	247	126,693	329·1	+ 5·9	3,271
District total	1,290	4	714	689,039	534·1	+ 7·8	31,570

NOTE.—The figures for the areas of *tahsils* are taken from revenue returns. The total District area is that given in the *Census Report*.

Hindus number 510,532, or more than 74 per cent. of the total; Muhammadans, 167,290; and Jains, 7,726. The people of Delhi city share with Lucknow the reputation of speaking the most elegant form of Hindustāni or Urdū.

Castes and
occupa-
tions.

The Jāts are the chief landowning tribe, numbering 114,000, and are almost entirely Hindus. Those of the south of the District centre about Ballabgarh, and their traditions are connected with the Jāt Rājās of that place. Those of the north are divided into two factions: the Dahiya, who trace their descent from a grandson of Prithwī Rāj, Dhanij by name, and a Jāt woman: and the Ahūlānas, who say that their ancestors came from Rājputāna. The Gūjars (28,000) are nearly all Hindus; they have a bad reputation as thieves, and levy a kind of blackmail on the residents of the civil station by ensuring that the rash householder who does not employ a

fluence of the river. In the *khādar*, where the soil is light and sandy, irrigation from wells is easy, and this tract mainly depends on the spring harvest. The *bāngar* is traversed by the Western Jumna Canal and, until the recent realignment, suffered severely from swamping; in its unirrigated portions the autumn harvest is naturally the more important, and south of Delhi the riverain strip is very narrow. In the lands lying just under the hills, the soil is light, and irrigation is chiefly carried on by dams which hold up the mountain torrents. Round the Najafgarh *jhil* and in the extreme south are blocks of land, inundated in the rains, with a light soil and water near the surface. Since the Najafgarh *jhil* was drained, cultivation on its borders has ceased to be as profitable as formerly.

Chief agricultural statistics and principal crops.

The District is held almost entirely by petty peasant proprietors, large estates covering only 50,000 acres, and about 16,000 acres owned by Government being held on temporary leases. The area for which details are available from the revenue records of 1903-4 is 1,284 square miles, as shown below:—

<i>Tahsil.</i>	Total.	Cultivated.	Irrigated.	Cultivable waste.
Delhi	429	394	101	71
Sonepat	460	323	194	82
Ballabgarh. . . .	395	250	27	41
Total	1,284	867	322	194

The chief crops in the spring harvest are gram and wheat, which occupied 36 and 159 square miles respectively in 1903-4; barley occupied 47 square miles. In the autumn harvest spiked millet occupied 133 and great millet 114 square miles, these being the staple food-grains of the District. Next in importance are cotton (37 square miles), sugar-cane (25 square miles), and maize (15 square miles). Sugar-cane is the most important and profitable crop of the autumn in the *bāngar* tracts of Delhi and Sonepat; melons are an important crop of the extra spring harvest on the river-side near the city.

Improvements in agricultural practice.

The cultivated area increased only from 821 square miles in 1881 to 867 in 1904, or by slightly more than 5 per cent., and there is little room for further extension. The character of the cultivation has, however, been enormously improved by the remodelling of the WESTERN JUMNA CANAL, which has caused the saline efflorescences and waterlogging, once characteristic of the canal-irrigated tracts, to disappear in great

measure. The draining of the Najafgarh *jhal* has also added to the cultivated area, besides vastly improving the physical well-being of the people. A good deal has been done in the way of encouraging the people to take advances for the construction of wells, and 1.2 lakhs was advanced under the Land Improvement Loans Act during the five years ending 1904.

The cattle form an important feature of agricultural economy, and few Jāts do not own a yoke of bullocks and a cow or buffalo, but the breeds are in no way peculiar. A horse fair is held at Delhi city, but the District does not produce anything beyond the ordinary village pony. The District board maintains one donkey and two horse stallions. Cattle and horses.

Of the total area cultivated in 1903-4, 322 square miles, or 37 per cent., were classed as irrigated. Of this area, 161 square miles were irrigated from wells alone, 941 acres from wells and canals, and 159 square miles from canals alone. The new Delhi branch of the Western Jumna Canal, which traverses Sonapat and the northern part of the Delhi *tahsil*, is estimated to irrigate 129 square miles yearly. When the canal was reopened under British rule, it was aligned for a great part of its length in a valley, and the watercourses were equally ill-constructed, often intersecting one another and running side by side for long distances. The result was that almost irretrievable damage was done by waterlogging and saline efflorescences, and the health of the people was seriously impaired. Since 1880, however, the distributing system has been entirely remodelled and about 386 miles of drainage channels constructed. The result has been most encouraging, and waterlogging with its attendant evils has almost entirely disappeared. A small area is irrigated by the Najafgarh canal, an escape which drains the Najafgarh *jhal* and is now in charge of the District board. The Agra Canal takes off from the Jumna below Delhi, but flows at too low a level to give much irrigation in this District. Irrigation.

The District contains 9,943 wells, besides 1,279 temporary wells, lever wells, and water-lifts. The Persian wheel is the commonest way of raising water in the north, and the rope and bucket in the south and centre. As there is no scope for the extension of canal-irrigation, the chief means of protection against famine is afforded by the construction of new wells.

The only forests are 35.9 square miles of unclassified forests and Government waste under the control of the Deputy-Commissioner. Forests.

Minerals.

Chalk is obtained in small quantities from two villages, where it is dug out of a rude mine, made by sinking a shaft 30 or 40 feet deep, and driving horizontal tunnels. The output is about 15,000 maunds annually. The work is done by menial castes, who get $2\frac{1}{2}$ annas a day for work below, and $1\frac{1}{2}$ or 2 annas for work on the surface. *Kankar* is quarried in about 125 villages, and a quartz-like building-stone is also found. A crystal mine, formerly worked at Arangpur, has long been abandoned. A certain amount of crude saltpetre is manufactured; and a saltpetre refinery in Delhi city turns out about 2,500 maunds annually.

Manufactures and trade.

The District possesses no arts or manufactures of any importance except those of the city. Similarly the commerce of the District all centres in the city, that of the rest of the District consisting merely in the interchange of agricultural produce for piece-goods, iron, and other necessities. Of the twenty-four factories in the District, which in 1904 employed 3,494 hands, all are in the city except a cotton-ginning and pressing factory at Sonapat, where the number of hands employed in 1904 was 130.

Railways and roads.

Delhi is in connexion with six railway systems. The East Indian, North-Western, and Oudh and Rohilkhand Railways enter it from Ghāziābād junction, crossing the Jumna by an iron bridge. The Delhi-Ambāla-Kāka Railway runs northwards from the city, and the Rājputāna-Mālwa Railway traverses the District for a short distance in the direction of Gurgaon. A line from Delhi to Agra was opened in 1904. The Jumna is navigable during the rainy season, and the Western Jumna Canal, continued as far as Delhi by the Okhla Navigation Canal, is navigable all the year round. Good metalled roads connect the city with Lahore, Agra, Jaipur, and Hissār; while a network of local trade-lines runs in every direction to the various minor towns. The District has altogether 143 miles of metalled and 499 of unmetalled roads, all of which, except 104 miles of metalled and 83 of unmetalled roads under the Public Works department, are maintained by the District board. The Jumna is crossed by four ferries, and the railway bridge at Delhi has a subway for ordinary wheeled traffic.

Famine.

The history of famine goes back to the year 1345 in the time of Muhammad bin Tughlak, when it is recorded that men ate one another. Subsequent famines occurred in 1631, in the time of Shāh Jahān; in 1661, under Aurangzeb, a severe famine; in 1739, under Muhammad Shāh, famine

Land
revenue
adminis-
tration.

two sit at head-quarters, and one in each *tahsil*. The predominant forms of crime are burglary and theft.

The only peculiarity as regards tenure of land is that in a few villages superior and inferior proprietors are found; the settlement is (with one exception) made with the latter, the superior proprietors merely receiving a charge of 5 to 10 per cent. on the revenue. The nature of the early revenue assessments appears to have been very summary. They were made, as far as possible, on the basis of existing arrangements, and were for short terms only. The administration, from annexation to 1841, was harsh and unsympathetic. The Sonapat and Delhi *tahsils* were regularly settled in 1842 and 1844, and Ballabgarh after its confiscation in 1857. The Settlement officer in 1842 reduced the demand in Sonapat, and excused himself for so doing by pointing out that the greatest difficulty had been invariably experienced in realizing the Government demand; that notwithstanding strenuous and well-sustained efforts the District officers and their subordinates had been baffled, and that large balances had frequently remained uncollected. Reductions were made in all *tahsils* at the regular settlement. The settlement of the whole District was revised between 1872 and 1880. The revenue rates on land irrigated from wells varied from Rs. 4 to 8 annas, on flooded land from Rs. 2-8 to Rs. 2, and on unirrigated land from Rs. 1-10 to 10 annas. Canal lands were assessed at 'dry' rates of about Rs. 1-8, Rs. 3 being paid as occupier's rate for the use of the water, plus an extra Rs. 1-8 as owner's rate. Villages on the Najafgarh *jhal* were charged a fluctuating assessment on the area cultivated, varying from Rs. 6 to Rs. 1-8 according to the nature of the crop. The new assessment resulted in an increase of Rs. 45,000. A change was made in 1895 in the method of realizing canal revenue, and the system then adopted remains in force. The land revenue demand in 1903-4, including cesses, was 10 lakhs. The average size of a proprietary holding is 3 acres.

The collections of land revenue alone and of total revenue are shown below, in thousands of rupees:—

	1880-1.	1890-1.	1900-1.	1903-4.
Land revenue . . .	8,60	8,12	7,68	8,06
Total revenue . . .	11,57	11,94	15,10	16,21

Local and
municipal.

The District contains four municipalities, DELHI, SONEPAT, BALLABGARH, and FARĪDĀBĀD; and two 'notified areas,' Mah-

of 1857 and the estate confiscated. The municipality was created in 1867. The income during the ten years ending 1902-3 averaged Rs. 7,000, and the expenditure Rs. 6,300. The income in 1903-4 was Rs. 8,700, chiefly derived from octroi; and the expenditure was Rs. 6,900. The town possesses a vernacular middle school and a dispensary.

Delhi City (*Dehli* or *Dilli*).—Head-quarters of the Delhi Division, District, and *tahsil*, Punjab, and former capital of the Mughal empire, situated in 28° 39' N. and 77° 15' E., on the west bank of the Jumna; distant from Calcutta 956 miles, from Bombay 982 miles, and from Karāchi 907 miles. The population at the last three enumerations was: (1881) 173,393, (1891) 192,579, and (1901) 208,575. The increase during the last decade is greatly due to the development of mill industries. The population in 1901 included 114,417 Hindus, 88,460 Muhammadans, 3,266 Jains, 2,164 Christians, and 229 Sikhs.

The area close to where the northernmost spur of the Arā-^{History.} valli Hills abuts on the Jumna has from remote times been the site of one great city after another. First of these is the city of Indraprastha, founded, according to the tradition preserved in the Mahābhārata, by the Pāndava chief Yudhishtira. Indraprastha was, however, only one of the five *prasthas* or 'plains,' which included Sonepat, Pānīpat, Pīlpat, and Bāghpat. Firishta has preserved a tradition that Delhi or Dillī was founded by a Rājā Dhilū before the Macedonian invasion; but as an historical city Delhi dates only from the middle of the eleventh century A.D., when Anang Pāl, a Rājput chief of the Tomar clan, built the Red Fort, in which the Kutb Minār now stands, and founded a town. He also removed the famous iron pillar on which are inscribed the eulogies of Chandra Gupta Vikramāditya, probably from Muttra, and set it up in 1052 as an adjunct to a group of temples. This remarkable relic consists of a solid shaft of metal 16 inches in diameter and about 23 feet in height, set in masonry, 3 feet of it being below the surface. Tradition indeed asserts that a holy Brāhman assured the Rājā that the pillar had been driven so deeply into the earth that it reached the head of Vāsuki, the serpent king who supports the world, and, consequently, had become immovable, whereby the dominion was ensured for ever to the dynasty of its founder. The incredulous Rājā ordered the monument to be dug up, when its base was found reddened with the blood of the serpent king. Thus convinced, Anang Pāl at once commanded that the shaft should be sunk

In December, 1398, while rival claimants of the house of Tughlak were fighting for the remnants of the kingdom, the hordes of Tīmūr reached Delhi. Mahmūd Shāh II, the nominal king, fled to Gujarāt, after his army had suffered a defeat beneath the walls; and Tīmūr, entering the city, gave it over for five days to plunder and massacre. Dead bodies choked the streets; and when at last even the Mongol appetite for carnage was satiated, the host retired, dragging with them into slavery large numbers of both men and women. For two months Delhi remained absolutely without government, until Mahmūd Shāh recovered a miserable fragment of his former empire. In 1412 he died; and his successors, the Saiyid vassals of the Mongols, held Delhi, with a petty principality in the neighbourhood, until 1450, when the Lodi dynasty succeeded to the Muhammadan empire. In 1503 Sikandar II made Agra the capital of the empire, but Delhi retained much of its former importance. After his defeat of Ibrāhīm II, the last of the Lodis, at Pānīpat, Bābar entered Delhi in 1526, but resided mainly at Agra. Humāyūn removed to Delhi, and built or restored the fort of Purāna Kila on the site of Indra-prastha. The Afghān Sher Shāh, who drove out Humāyūn in 1540, enclosed and fortified the city with a new wall. One of his approaches, known as the Lāl Darwāza or 'red gate,' still stands isolated on the roadside, facing the modern jail. The fortress of Salimgarh preserves the name of a son of Sher Shāh. Humāyūn's tomb forms one of the most striking architectural monuments in the neighbourhood. Akbar and Jahāngīr usually resided at Agra, Lahore, or Ajmer. Shāh Jahān rebuilt the city on its present site, surrounding it with the existing fortifications and adding the title of Shāhjahān-ābād from his own name. He also built the Jāma Masjid, and reopened the Western Jumna Canal. From his time, except for brief periods, Delhi remained the head-quarters of the Mughal emperors. In 1737, during the reign of Muhammad Shāh, Bāji Rao, the Marāthā Peshwā, appeared beneath its walls. Two years later, Nādir Shāh entered the city in triumph and re-enacted the massacre of Tīmūr. For 58 days the victorious Persian plundered rich and poor alike, and left the city with a booty estimated at nine millions sterling. Before the final disruption of the decaying empire in 1760, the unhappy capital was twice devastated by civil war, sacked by Ahmad Shāh Durrānī, and finally spoiled by the rapacious Marāthās. Alamgīr II, the last real emperor, was murdered in 1759. Shāh Alam, who assumed the empty title, could not establish

his authority in Delhi, which became the alternate prey of Afghāns and Marāthās until 1771, when the latter party restored the emperor to the city of his ancestors. In 1788 a Marāthā garrison permanently occupied the palace, and Shāh Alam remained a prisoner in the hands of Sindhia until the British conquest. On March 14, 1803, Lord Lake, having defeated the Marāthās, entered Delhi, and took the emperor under his protection. Next year, Holkar attacked the city; but Colonel (afterwards Sir David) Ochterlony, first British Resident, successfully held out against overwhelming numbers for eight days, until relieved by Lord Lake. The conquered territory was administered by the British in the name of the emperor, while the palace remained under his jurisdiction.

The story of the Mutiny at Delhi and of the restoration of British sovereignty belongs to Indian rather than to local history. Delhi was recovered in September, 1857, and remained for a while under military government; and it became necessary, owing to the frequent murders of European soldiers, to expel the population for a while from the city. Shortly after, the Hindu inhabitants were freely readmitted; but the Muhammadans were still rigorously excluded, till the restoration of the city to the civil authorities on January 11, 1858.

Delhi has on two occasions since the Mutiny been the scene of Imperial assemblages: in 1877 when Queen Victoria was proclaimed Empress of India, and in 1903 to celebrate the accession of Edward VII.

The modern city of Delhi extends for over 2 miles along the west bank of the river Jumna, and on the other three sides is enclosed by a lofty stone wall $3\frac{1}{2}$ miles in length, built by Shāh Jahān, and reconstructed by the British at the beginning of the last century. It was once entered by fourteen gates, eight on the land side and six leading to the river; but many of these have now been removed. Of those that remain, the principal are: on the north the Kashmīr Gate, on the west the Farāsh Khāna and Ajmer Gates, and on the south the Delhi Gate. The imperial palace, now known as the Fort, lies to the east of the city, and abuts directly on the river. It is surrounded on three sides by an imposing wall of red sandstone, with small round towers, and gateways on the west and south.

On the north-east of the Fort is the outwork of Salimgarh. At this point the East Indian Railway enters the city by a magnificent bridge across the Jumna, passing over Salimgarh and through a corner of the Fort to the railway station within

Modern
Delhi.

thoroughfares of Delhi, ten in number, thoroughly drained, metalled, and lighted. The principal thoroughfare, the Chāndni Chauk, or 'silver street,' leads eastwards from the Fort to the Lahore Gate, three-quarters of a mile long by 74 feet broad. Throughout the greater part of its length, a double row of trees runs down its centre on both sides of a raised path, which has taken the place of the masonry aqueduct that in former days conducted water from the canal into the palace. A little to the south of the Chāndni Chauk is the Jāma Masjid, or 'great mosque,' standing out boldly from a small rocky rising ground. Begun by Shāh Jahān in the fourth year of his reign, and completed in the tenth, it still remains one of the finest buildings of its kind in India. The front courtyard, 450 feet square, surrounded by a cloister open on both sides, is paved with granite inlaid with marble, and commands a view of the whole city. The mosque itself, a splendid structure forming an oblong 261 feet in length, is approached by a magnificent flight of stone steps. Three domes of white marble rise from its roof, with two tall and graceful minarets at the corners in front. The interior of the mosque is paved throughout with white marble, and the walls and roof are lined with the same material. Two other mosques deserve a passing notice: the Kālī Masjid or 'black mosque,' so called from the dark colour given to it by time, and supposed to have been built by one of the early Afghān sovereigns; and the mosque of Roshan-ud-daula. Among the more modern buildings may be mentioned the Residency, now occupied by the Government high school; the town hall, a handsome building in the Chāndni Chauk, containing a Darbār hall with a good collection of pictures, a museum, and a public library; and the Church of St. James, built at a cost of £10,000 by Colonel Skinner, an officer well-known in the history of the East India Company. About half-way down the Chāndni Chauk is a high clock-tower. North of the Chāndni Chauk lie the Queen's gardens. Beyond the city walls the civil lines stretch away on the north as far as the historic Ridge, about a mile outside. To the west and south-west considerable suburbs cluster beyond the walls, containing the tombs of the imperial family. That of Humāyūn is a noble building of red sandstone with a dome of marble. It lies about $3\frac{1}{2}$ miles from the Delhi Gate in a large garden of terraces, the whole surrounded by an embattled wall, with towers and four gateways. In the centre stands a platform about 20 feet high by 200 feet square, supported by cloisters,

and ascended by four great flights of granite steps. Above rises the mausoleum, also a square, with a great dome of white marble in the centre. About a mile to the westward is another burying-ground, or collection of tombs and small mosques, some of them very beautiful. The most remarkable is perhaps the little chapel in honour of a celebrated Muhammadan saint, Nizām-ud-din, near whose shrine the members of the Mughal imperial family, up to the time of the Mutiny, lie buried, each in his own little enclosure, surrounded by very elegant lattice-work of white marble.

The palaces of the nobles, which formerly gave an air of grandeur to the city, have for the most part disappeared. Their sites are occupied by structures of less pretension, but still with some elegance of architectural design. The city is now amply supplied with water; and much attention has of late been paid to cleanliness and sanitary requirements generally.

The municipality was created in 1850. The income and expenditure during the ten years ending 1902-3 averaged 5.6 lakhs. The income in 1903-4 was 6.5 lakhs, chiefly derived from octroi (3.1 lakhs), taxes on houses, lands, animals, and vehicles, and tolls (1 lakh), municipal property and fines, &c. (Rs. 79,000), and sale of water (Rs. 40,000); and the expenditure was 5.8 lakhs, including general administration (Rs. 77,000), public safety (Rs. 96,000), water-supply (Rs. 40,000), conservancy (Rs. 83,000), hospitals and dispensaries (Rs. 41,000), public works (Rs. 69,000), and education (Rs. 33,000).

The ordinary garrison consists of a company of garrison artillery and a detachment of British infantry in the Fort; a native infantry regiment at Daryā Ganj; and a native cavalry regiment, for which lines have recently been built in the old cantonment, beyond the Ridge. The income and expenditure of cantonment funds during the ten years ending 1902-3 averaged Rs. 12,200.

Arts and
manufac-
tures.

The occupations and industries of Delhi are numerous, comprising jewellery, silversmith's work, brass and copper ware, ivory-carving, pottery, weaving, gold and silver embroidery, miniature painting, &c. For centuries the jewellery of Delhi has had a worldwide reputation, but it is doubtful whether the productions of the present day are equal to those of Mughal times. Ivory-carving is carried on successfully by one or two families, and within recent years some very beautiful caskets and similar articles in this material have been produced. A

feature of the work is the employment of geometric open-work patterns, which are carried out with a very high degree of finish. The pottery is a kind of rough porcelain and has certain artistic qualities. It is a comparatively modern art, and is in the hands of only one or two craftsmen. An important industry is gold and silver embroidery, chiefly carried on by the dealers of the Chāndni Chauk. Although the designs are now showing signs of European influence, good Oriental patterns are still obtainable, and the art is in a fairly flourishing condition. The manufacture of gold and silver wire to carry on this industry employs a large number of hands. These *kandla kashān*, or wire-drawers, pay the municipality yearly Rs. 25,000, in return for which it supervises the melting and blending of the metal in a central workshop, and thereby gives it a guarantee of purity whose value is undisputed throughout India. Modern mill and factory industries have made great progress in the city. The Delhi Cloth and General Mills in 1904 employed 624 hands, the Hanumān and Mahādeo Spinning and Weaving Mills 895, the Kishen Cotton-Spinning Mill 575, and the Jumna Cotton-Spinning Mills 388. The principal flour-mills are the Northern India Flour-Mills with 107 employés, the Ganesh Flour-Mills with 178, and John's Flour-Mill with 113. The three sugar-cane pressing factories employed 246 hands, and the three cotton-ginning factories 305. Minor industries include printing, biscuit-making, malting, and iron and brass-work. The total number of factories, mills, &c., in 1904 was 23, and the total number of employés 3,364.

Delhi possesses a very considerable trade, though the continuation of the North-Western Railway on the eastern bank of the river has thrown it somewhat off the modern line of traffic. It derives importance as a trade centre at present owing to the fact that grain and piece-goods are free of octroi, and it still forms the main entrepôt for commerce between Calcutta or Bombay on the one side and Rājputāna on the other. The chief imports include chemicals, cotton, silk, fibres, grain, oilseeds, *ghā*, metals, salt, horns and hides, and European piece-goods. The exports consist of the same articles in transit, together with tobacco, sugar, oil, jewellery, and gold or silver lacework. Beyond the borders of the Province, Delhi merchants correspond with those of Jind, Kābul, Alwar, Bikaner, Jaipur, and the Doāb; while with all the Punjab towns they have extensive dealings. European finance is represented by the Bengal, the National, the Delhi and

Commerce
and trade.

London, the Allahābād, and the Upper India Banks; and several cotton merchants have agents in the city. The great trade avenue of the Chāndni Chauk, already described, is lined with the shops and warehouses of merchants, and is one of the chief sights of interest to the visitor at Delhi.

Education. The principal educational institution was, until 1877, the Delhi College, founded in 1792, but abolished in 1877, in order to concentrate higher education in the Punjab University at Lahore. The chief school is now the municipal high school, with six branch schools; other high schools are the Anglo-Arabic, the Anglo-Sanskrit, St. Stephen's mission school, and the Shāhzāda high school, maintained chiefly for poor descendants of the Mughal imperial family. All these receive grants-in-aid. The municipal high school has been managed by the Educational department since 1904. The city also has a normal school, which trains vernacular teachers for primary schools, a municipal industrial school, the aided middle boarding-schools for girls of the Baptist Mission and the Society for the Propagation of the Gospel, and a school on the Yūnāni system of native medicine.

Faridābād.—Town in the Ballabgarh *takstl* of Delhi District, Punjab, situated in 28° 25' N. and 77° 20' E., 16 miles from Delhi, near the Delhi-Muttra road and on the Delhi-Agra branch of the Great Indian Peninsula Railway. Population (1901), 5,310. The town was founded in 1607 by Shaikh Farid, Jahāngir's treasurer, to protect the high-road from Delhi to Agra. It is of no commercial importance. The municipality was created in 1867. The income during the ten years ending 1902-3 averaged Rs. 5,900, and the expenditure Rs. 5,800. The income in 1903-4 was Rs. 6,800, chiefly derived from octroi; and the expenditure was Rs. 6,400. The chief educational institutions are the Victoria Anglo-vernacular middle school (unaided), a vernacular middle school maintained by the municipality, and the English station school (middle). There is a Government dispensary.

Indarpat.—Village in Delhi District, Punjab, occupying the site of the ancient Indraprastha, and situated in 28° 36' N. and 77° 17' E., close to the modern city of Delhi. The original town stood upon the banks of the Jumna, between the Kotila of Firoz Shāh and the tomb of Humāyūn; and although the river has now shifted its channel a mile eastward, the former bed may still be traced past the early site. Scarcely a stone of the ancient capital remains standing; but the village of Indarpat and the Muhammadan fort of Purāna Kila probably

occupy the true site, while the modern name is obviously a corruption of the old Hindu name. Indraprastha is commonly believed to have been founded by the earliest Aryan colonists of India; and the Mahābhārata relates how the five Pāndavas, Yudhishtira and his brethren, leading a body of settlers from Hastināpur on the Ganges, expelled the savage Nāgās, and built their capital upon this spot. For later details see DELHI CITY.

Sonepat Town (*Sonpat*; Sanskrit *Suvarnaprastha*).—Head-quarters of the *tahsil* of the same name in Delhi District, Punjab, situated in 29° N. and 77° 1' E., on the Delhi-Ambāla-Kālka Railway, 28 miles north of Delhi. Population (1901), 12,990. One popular tradition avers that this is one of the five towns mentioned in the Mahābhārata which Yudhishtira demanded from Duryodhana as the price of peace. Another ascribes its foundation to Rājā Soni, thirteenth in descent from Arjuna, a brother of Yudhishtira. It is of no commercial importance. The municipality was created in 1867. The income and expenditure during the ten years ending 1902-3 averaged Rs. 14,300. The income in 1903-4 was Rs. 16,000, chiefly derived from octroi; and the expenditure was Rs. 16,400. The town possesses an Anglo-vernacular middle school, a Government dispensary, and a cotton-ginning and pressing factory which in 1904 employed 130 hands.

Karnāl District.—District in the Delhi Division of the Punjab, lying between 29° 11' and 30° 15' N. and 76° 11' and 77° 17' E., with an area of 3,153 square miles, including 36 outlying villages, scattered throughout the eastern part of the State of Patialā. The District is bounded on the north by Patialā State and Ambāla District; on the east by the river Jumna, which separates it from the Districts of Sahāranpur, Muzaffarnagar, and Meerut in the United Provinces; on the south by the Punjab Districts of Delhi and Rohtak; and on the west by the States of Patialā and Jind. It is divided into two parts by the low ridge which forms the watershed between the Indian Ocean and the Bay of Bengal. To the east of this ridge along the Jumna lies the *khādar*, a strip of low-lying land from 5 to 10 miles wide; though it is not so thickly wooded as the rest of the District, date-palms abound, and in places a thick jungle skirts the river bank. West of the ridge lies the *bāngar*, an upland plain watered throughout by the Western Jumna Canal, and stretching parallel to the *khādar* for the whole length of the District. These two tracts fill up

Boun-
daries, con-
figuration,
and hill
and river
systems.

practically the whole of the southern *tahsil* of Pānīpat; but in Karnāl and Kaithal, the central *tahsils*, the *bāngar* rises with a perceptible step into the Nardak¹, a high and once arid country, now traversed by the Sirsa branch of the Western Jumna Canal. In the north of the District nearly the whole of Thānesar and the northern part of the Kaithal *tahsil* are intersected by mountain torrents which drain the Lower Himālayas, and include large tracts of wild country covered with forests of *dhāk* (*Butea frondosa*).

The Jumna forms the entire eastern boundary for a distance of 81 miles. Its bed varies from half a mile to a mile in width, of which the stream occupies only a few hundred yards in the cold season. The most important of the torrents which traverse the northern portion are the GHAGGAR, with its tributaries the Umla and SARASWATĪ, the CHAUTANG, and the Mārkaṇḍa and Purān, the last an old bed of the Ghaggar. Minor drainage channels are the Nai or 'new' Nadi, the Būrhi or 'old' Nadi, and Rākshī.

Geology
and botany.

Karnāl District offers nothing of geological interest, as it is situated entirely on the alluvium. The flora of the upper Gangetic plain is well represented in the eastern portion; in the west there is an approach to the desert vegetation; while the Jumna valley produces a few temperate types, e.g. a rose, a kind of scurvy grass (*Cochlearia*), both of which are found again in Lower Bengal, and a crowfoot (*Ranunculus pennsylvanicus*), which extends to Ludhiāna, but is absent from the Himālayas. Relics of a former Deccan flora, of which a wild cotton is the most interesting, survive, especially in the neighbourhood of Thānesar. Indigenous trees, except the *dhāk*, are uncommon; in the Jumna *khādar* a low palm abounds, which is often taken for a wild form of the date-palm, but is almost certainly a distinct species.

Fauna.

The Nardak was a favourite hunting-ground of the Mughal emperors, and as late as 1827 Archer says that lions were sometimes seen within 20 miles of Karnāl, while tigers were exceedingly common. Now, however, even the leopard is only found rarely, but wolves are still common. Antelope, *nilgai*, 'ravine deer' (Indian gazelle), and hog deer are fairly plentiful where there is suitable cover. Small game is abundant.

Climate
and temperature.

Fever is particularly prevalent in the Naili (Nāli) tract, flooded by the Saraswatī, and in the canal-irrigated portions of

¹ The Nardak is properly another name for KURUKSHETRA, but it is extended to include all the high tract.

the District. Owing to the faulty alignment of the canal and the swamping caused thereby, fever used to be terribly prevalent, and in consequence the cantonments were removed from Karnāl; but recent improvements have greatly diminished the evil. The climate of Kaithal resembles that of the plains of the Punjab proper, but the Jumna *tahsils* are not subject to the same extremes of heat and cold.

The annual rainfall averages 30 inches at Karnāl, 23 at Rainfall. Pānīpat, and 18 at Kaithal, rapidly decreasing as one goes west or south. The *khādar* receives the most plentiful and frequent rain, as many local showers follow the bed of the river. Of the rainfall at Karnāl, 27·4 inches fall in the summer months and 2·4 in the winter.

The early legendary history of the District will be found in History the account of KURUKSHETRA or the holy plain of the Hindus, and which occupies its north-western portion. The number of archæology.

✓ Indo-Scythian coins found at Polar on the Saraswati would seem to show that about the beginning of the Christian era the District was included in the Indo-Scythian empire. In or about A.D. 400 it was traversed by the Chinese pilgrim Fa Hian and in 639 by Hsien Tsiang, the latter finding a flourishing kingdom with its capital at Thānesar. Though Thānesar was sacked by Mahmūd of Ghazni in 1014, the country remained under Hindu rule until the defeat of Prithwī Rāj at Tirāwari in 1192. Thereafter it was more or less firmly attached to Delhi till after the invasion of Timūr, who marched through it on his way to the capital. It then belonged, first to the ruler of Sāmāna, and then to the Lodi kings of the Punjab, and during the century and a half that separated Akbar from Timūr was the scene of numerous battles, of which the most important were two fought at PĀNĪPAT. For two centuries Karnāl enjoyed peace under the Mughals, broken only by the raid of Ibrāhīm Husain Mirza in 1573, the flight of prince Khusrū through the District in 1606, and the incursion of Banda Bairāgi in 1709. During this period a canal was constructed from the Jumna and the imperial road put in repair. In 1738 Nādir Shāh defeated Muhammad Shāh near Karnāl, and in 1761 occurred the third great battle of PĀNĪPAT, in which the Marāthās were routed by the Afghān army. A terrible period of anarchy followed, during which the tract formed a sort of no-man's-land between the Sikh and Marāthā powers, coveted by both but protected by neither, and the prey of every freebooter that chanced to come that way. On annexation, in 1803, the greater part of the country was held

by Sikh chiefs or by confederacies of Sikh horsemen; and the District was gradually formed out of their territories as they escheated. The most important were the petty principalities of Kaithal, Thānesar, and Lādwa, of which the first two lapsed between 1832 and 1850, while Lādwa was confiscated owing to the conduct of its chief during the first Sikh War. In 1849 the District of Thānesar was formed, but in 1862 it was broken up into the two Districts of Ambāla and Karnāl. During the Mutiny there was a good deal of disorder, but no serious outbreak occurred. Great assistance was given by the Rājās of Patiala and Jind in preserving order. The Pehowa *thāna* was transferred from Ambāla to the Kaithal *tahsil* of the District in 1888, and the rest of the Pipli *tahsil* (now Thānesar) was added to it in 1897.

The chief relics of antiquity are to be found at KARNĀL, PĀNĪPAT, THĀNESAR, and PEHOWA. At the village of Sītā Mai in the Nardak is a very ancient shrine of Sītā, and several of the great *sarais* built along the old imperial road still remain.

The
people.

The District contains 7 towns, and 1,383 villages. Its population at the last three enumerations was: (1881) 820,041, (1891) 861,160, (1901) 883,225. It increased by 2.6 per cent. during the last decade, the increase being greatest in the Pānīpat *tahsil* and least in Karnāl. In the Thānesar *tahsil* the population decreased 0.9 per cent. in the twenty years ending 1901, owing to the unhealthiness of the tract; while Kaithal increased by 20 per cent. in the same period, owing to the development of canal-irrigation. The District is divided into the four *tahsils* of KARNĀL, PĀNĪPAT, KAITHAL, and THĀNESAR, the head-quarters of each being at the place from which it is named. The chief towns are the municipalities of KARNĀL (the District head-quarters), PĀNĪPAT, KAITHAL, SHĀHĀBĀD, THĀNESAR, and LĀDWA.

The table on the next page gives the chief statistics of population in 1901.

Hindus number 623,597, or over 70 per cent. of the total. Monastic communities of Bairāgis own a good deal of land and exercise considerable influence in the District. Muham-madans (241,412) form 27 per cent. of the population. The Saiyids of the District belong to the Shiah organization known as the Bārā Sādāt, which was founded by Saiyid Abdul Farsh Wasiti, a follower of Mahmūd of Ghazni. Sikhs number 12,294. Hindi is spoken by 96 per cent. of the population, and Punjābi in the scattered villages surrounded by Patiala territory.

harvest great millet covered 256 square miles, and rice and spiked millet 97 and 94 square miles respectively. Cotton covered 66 square miles, maize 72, and sugar-cane 30.

<i>Tahsil.</i>	Total.	Cultivated.	Irrigated.	Cultivable waste.
Karnāl . .	838	450	164	263
Thānesar . .	559	335	37	151
Pānīpat . .	461	288	192	74
Kālthal . .	1,289	724	208	416
Total	3,147	1,797	601	904

During the thirteen years ending 1904, the cultivated area rose from 1,637 square miles to more than 1,797, or by 10 per cent., the increase being chiefly due to the extensions of canal-irrigation. This has been accompanied by an extended cultivation of maize, cotton, and sugar-cane, as well as of the more valuable spring crops; and the use of manure is said to be increasing. Loans for the construction of wells are fairly popular. In the five years ending 1903-4, Rs. 57,000 was advanced under the Land Improvement Loans Act, and 2 lakhs for the purchase of bullocks and seed.

Improvements in agricultural practice.

Cattle-raising used to play an important part in the economy of the Nardak before the construction of the Sirsa canal, and the cattle of the District are still noted for their excellence. The local breed of horses is of no particular importance. A remount dépôt, established at Karnāl in 1889, was abolished in 1902, and its lands are now used as a military grass farm. The District board maintains three horse and five donkey stallions. Large flocks of goats and sheep are kept in parts, the sheep being all of the small black-tailed breed. There is a fine breed of pigs at Karnāl, dating from the time of the old cantonment.

Cattle, horses, and sheep.

Of the total area cultivated in 1903-4, 601 square miles, or 33 per cent., were classed as irrigated. Of this area, 230 square miles were irrigated from wells, 364 square miles from canals, 32 acres from wells and canals, and 4,581 acres from streams and tanks. The District possessed 10,931 masonry wells, besides 223 unbricked wells, lever wells, and water-lifts. In the *khādar*, although little irrigation is necessary, wells worked by Persian wheels are numerous. The new main line of the WESTERN JUMNA CANAL enters the Thānesar *tahsil*, and within this District gives off the Sirsa, Hānsi, and New Delhi branches, which irrigate the greater portion of the Nardak and *bāngar*,

except in Thānesar, where the percolation from the main canal and the stoppage of the natural drainage keep the land so moist that it suffers from excess of water rather than from drought. The total area irrigated from the Western Jumna Canal is 2,493 acres. The *bāngar* in the Kaithal *tahsil* is also supplied by the Saraswati canal (an inundation canal made and worked by the District board), and some of the Nardak villages are also watered by floods from the Chautang. The few wells in these tracts are on the rope-and-bucket system. The northern part of the District is irrigated by floods from the hill torrents, and for the most part suffers from capricious water-supply, being waterlogged one year and parched the next. Except in the more favoured tracts, wells are liable to be destroyed by floods and are little used. The villages scattered through Patiala territory are irrigated from the Sirhind Canal.

Forests.

The District contains 17 tracts of unclassed forest, with a total area of 24 square miles, in charge of the Deputy-Commissioner; but these are not true forests, being covered only with scrub and small trees. About 2.6 square miles of 'reserved' forest are under the Military department.

Minerals.

Sal-ammoniac has from ancient times been manufactured by the potters of the Kaithal *tahsil*. About 84 tons, valued at Rs. 3,400, are produced annually, and sold to merchants, who mostly export it. It is prepared by burning bricks made of the dirty clay found in certain ponds, and subjecting the substance that exudes from them to sublimation in closed vessels. The District has four saltpetre refineries. The only other mineral product is *kankar*.

Arts and manufactures.

Karnāl used to have a name for shoe-making, but the industry is said to be declining from want of capital. Pānīpat is famous for glass-blowing, the chief product being silvered globes which, when broken up, are used for mirror-covered walls, or sewn on *phūlkāris*; the glass retorts used in the manufacture of sal-ammoniac are also made. The town is noted for its manufacture of brass vessels, small fancy wares in various metals, and silver beads. The District possesses three cotton-ginning factories, at Pānīpat, Kaithal, and Dhātrat; a cotton-press at Pānīpat; and two combined ginning and pressing factories, at Pānīpat and Kaithal. The total number of employes in 1904 was 702. Silver-work and musical instruments are made at Shāhābād. Some good lacquered wood-work is also produced.

Commerce and trade.

The chief exports are wheat, cotton, gram, fine rice, *ghī*,

in Kaithal were protected by the Nardak irrigation channel, constructed as a relief work in 1897; the tracts affected were chiefly the Naili and *bāngar* tracts of Kaithal and parts of Thānesar. The highest daily average relieved was 14,075, and the expenditure was 2.6 lakhs.

District
subdivi-
sions and
staff.

The District is divided into the four *tahsils* of KARNĀL, PĀNĪPAT, THĀNESAR, and KAITHAL, each under a *tahsildār* and a *naib-tahsildār*. In the last the sub-*tahsil* of Gula is also in charge of a *naib-tahsildār*. The *tahsil* of Kaithal forms a subdivision. The Deputy-Commissioner holds executive charge of the District, aided by three Assistant or Extra Assistant Commissioners, of whom one is subdivisional officer in charge of Kaithal and one in charge of the District treasury.

Civil
justice and
crime.

The Deputy-Commissioner as District Magistrate is responsible for the criminal justice of the District, and civil judicial work is under a District Judge. Both officers are supervised by the Divisional and Sessions Judge of the Delhi Civil Division. There is one Munsif, who sits at head-quarters. There are also six honorary magistrates. Cattle-stealing, the normal crime of the District, is now less prevalent than formerly, owing to the increase of cultivation made possible by the development of the canals. Formerly heads of families of respectable birth would demur to giving a daughter in marriage to a man who had not proved his ability to support a family by cattle-lifting.

Land
revenue
adminis-
tration.

The tract which passed to the British in 1803, and formed part of the old Pānīpat District, was summarily assessed in the years 1817-24, with the exception of the estates assigned to the Mandal family in exchange for the lands they held in the United Provinces. In accordance with the spirit of the time, the summary settlement was oppressive, and the methods of assessment and collection were vexatious and extortionate; a revision of assessments was necessitated by the famine of 1824, and by degrees a more reasonable system was evolved. The regular settlement, made in 1842, was both moderate and fairly distributed. In the *khādar* the assessment on the whole worked well; in the *bāngar* the deterioration of soil caused by the canal brought absolute ruin to many villages, and in 1859-60 large reductions of revenue were made and principles laid down for annual relief to be afforded when necessary. Meanwhile, in the Mandal estate, the assignees struggled to realize their revenue in kind from a lawless and independent Rājput peasantry till 1847, when their oppression and mismanagement necessitated the tract being brought under settle-

ment. The assessment was revised in 1852 and again in 1856. The revised settlement of 1872-80 comprised both these tracts; the revenue rate for irrigated land varied from Rs. 1-14 to Rs. 2-14, and for unirrigated land from 8 annas to Rs. 1-12; pasture was rated at 8 pies an acre; and canal lands were assessed at 'dry' rates varying from Rs. 1-5 to Rs. 1-13.

The rest of the District, comprising the *tahsils* of Kaithal, Thānesar, and the Indri tract of Karnāl, formed part of the territories of the Cis-Sutlej chiefs, who were taken under protection by the proclamation of 1809. These territories as they escheated were summarily assessed. Thānesar and Indri were regularly settled in 1848-56 and Kaithal in 1853-6. The whole of this portion of the District came under the Karnāl-Ambāla revision in 1882-9. The average assessment on 'dry' land is R. 0-14-3 (maximum, Rs. 1-6; minimum, R. 0-6-6), and on 'wet' land Rs. 2-14 (maximum, Rs. 3-12; minimum, Rs. 2). The total demand for 1903-4, including cesses, was 12 lakhs. The average size of a holding cultivated by the owner is 5.3 acres. The whole District came under settlement in 1904, the present assessment expiring in 1908.

The collections of land revenue alone and of total revenue are shown below, in thousands of rupees:—

	1880-1.	1890-1.	1900-1.	1903-4.
Land revenue . . .	6,36	6,95	8,20	8,29
Total revenue . . .	7,63	8,88	12,68	13,45

The District contains six municipalities: KARNĀL, PĀNĪPAT, Local and KAITHAL, SHĀHĀBĀD, THĀNESAR, and LĀDWA. Outside these, municipal. local affairs are managed by the District board, whose income amounted to nearly 1½ lakhs in 1903-4. The expenditure in the same year was 1.2 lakhs, education forming the largest item.

The regular police force consists of 683 of all ranks, including Police and 147 municipal police, under a Superintendent, assisted by jails. 4 inspectors. Village watchmen number 1,540. The District contains 22 police stations, 1 outpost, and 5 road-posts. The Sānsis, Balochs, and Tagās are proclaimed under the Criminal Tribes Act; and 55 Sānsis, 447 Balochs, and 237 Tagās were registered in 1903 under the Act. The District jail at headquarters has accommodation for 155 prisoners.

Karnāl is the most backward District in the Province in the Education. matter of education, and in 1901 the proportion of literate

The upland portion of the *tahsil* is irrigated by the Western Jumna Canal; but in the Nardak the people have not entirely abandoned their pastoral traditions, and still retain ample grazing-grounds for their cattle.

Thānesar Tahsil (*Thāneswar*).—Northern *tahsil* of Karnāl District, Punjab, lying between $29^{\circ} 55'$ and $30^{\circ} 15'$ N. and $76^{\circ} 36'$ and $77^{\circ} 17'$ E., on the west bank of the Jumna, with an area of 559 square miles. The population in 1901 was 173,208, compared with 177,442 in 1891. It contains the towns of THĀNESAR (population, 5,066), the head-quarters, LĀDWA (3,518), and SHĀHĀBĀD (11,009); and 418 villages. The land revenue and cesses amounted in 1903-4 to 2.8 lakhs. Thānesar practically coincides with the old Pipli *tahsil* of Ambāla District, from which it was transferred in 1897. On the east it has a narrow frontage along the Jumna. The fertile riverain lowlands average about 6 miles in width. The western boundary of this tract is the old bank of the Jumna, and from the crest of this bank the country slopes away westwards. The uplands are intersected by several torrent-beds, and the soil, especially to the south, is for the most part stiff and infertile. *Dhāk* jungle abounds. The Markanda country on the north-west has the advantages of a lighter soil and fertilizing floods.

Pānīpat Tahsil.—Southern *tahsil* of Karnāl District, Punjab, lying between $29^{\circ} 11'$ and $29^{\circ} 30'$ N. and $76^{\circ} 38'$ and $77^{\circ} 10'$ E., on the west bank of the Jumna, with an area of 462 square miles. The population in 1901 was 196,284, compared with 184,856 in 1891. It contains the town of PĀNĪPAT (population, 26,914), the head-quarters, and 172 villages. The land revenue and cesses amounted in 1903-4 to 3.5 lakhs. On the east lie the Jumna lowlands, rich, picturesque, and unhealthy. West of the railway line the country lies at a higher level. The soil is in places saline, and considerable tracts are in consequence uncultivated, but the *tahsil* enjoys a high degree of prosperity. The uplands are irrigated by the Western Jumna Canal.

Kaithal Tahsil.—Western *tahsil* and subdivision of Karnāl District, Punjab, lying between $29^{\circ} 22'$ and $30^{\circ} 12'$ N. and $76^{\circ} 11'$ and $76^{\circ} 47'$ E., with an area of 1,289 square miles. The population in 1901 was 265,189, compared with 257,493 in 1891. It contains the towns of KAITHAL (population, 14,408), the head-quarters, and PŪNDRI (5,834); and 413 villages, including PEHOWA, a place of religious importance. The land revenue and cesses amounted in 1903-4 to 2.7 lakhs. The *tahsil*

consists chiefly of the petty principality of Kaithal, which escheated in 1843. North of the Ghaggar, the country is undulating and the soil contains a considerable proportion of sand. The tract between the Ghaggar and the southern limits of the Saraswatī depression consists of vast prairies, flooded during the rains and interspersed with numerous trees and patches of cultivation. This tract, known as the Naili (Nāli), is notoriously unhealthy, but the pasture it affords is invaluable in dry years. The southern half of the *tahsil* is a level plain, now irrigated by the Western Jumna Canal. On the east is the Nardak. The people have not yet entirely abandoned their pastoral traditions, and large tracts are still used for grazing alone. Farther west, cultivation becomes more general, and in the extreme south-west the soil contains a large proportion of sand.

Gula.—Sub-*tahsil* of the Kaithal *tahsil* of Karnāl District, Punjab. It has an area of 455 square miles, and contains 204 villages. The head-quarters are at the village of Gula. The land revenue and cesses amounted in 1903-4 to 1.2 lakhs.

Kunjpura ('the heron's nest').—An estate in the District and *tahsil* of Karnāl, Punjab, founded by Najābat Khān, a Ghorgasht Pathān and soldier of fortune under the Mughal emperors. Najābat Khān built a stronghold in the marshes of the Jumna early in the eighteenth century, and then revolted against the imperial government. Siding with Nādir Shāh in 1739, Najābat Khān was recognized by him as chief of Kunjpura and held it till he was killed in 1760, when the Marāthās razed his stronghold to the ground. His son, Diler Khān, received large grants of territory from the Durrānis, but he and his successor were driven out of their lands west of the Jumna by the Rājā of Jind and other Sikh chiefs. In 1787, however, Sindbia expelled the Jind Rājā from Karnāl, and ten years later General Perron recognized Gulsher as Nawāb of Kunjpura. His son, Rahmat Khān, allied himself to Lord Lake in 1801, and in 1811 was recognized as a protected chief by the British Government. In 1846 the Nawāb of Kunjpura lost his sovereign powers, and the history of the family has since been one of incessant litigation. The present Nawāb succeeded in 1886. He holds a *jāgīr* of thirty-eight villages with a revenue of Rs. 31,000, besides which his estate yields an income of nearly Rs. 32,000.

Kaithal Town.—Head-quarters of the subdivision and *tahsil* of the same name in Karnāl District, Punjab, situated in 29° 48' N. and 76° 24' E., 38 miles west of Karnāl town, and the terminus of the Kaithal branch of the Southern Punjab

Railway. Population (1901), 14,408. Kaithal is picturesquely situated on an extensive tank, which partly surrounds it, with numerous bathing-places and flights of steps. It lies in KURUKSHETRA, and is said to have been founded by the hero Yudhishthira. It bore in Sanskrit the name of Kapisthala, or the 'abode of monkeys,' and possesses an *asthān* or temple of Anjni, mother of Hanumān, the monkey god. During the time of the earlier Muhammadan emperors it was a place of some importance, and Timūr, who says its inhabitants were fire-worshippers, halted here before he attacked Delhi in 1398. The tombs of several saints, the oldest of which is that of the Shaikh Salāh-ud-dīn of Balkh (A.D. 1246), show that it was a centre of Muhammadan religious life. The town was renovated, and a fort built, under Akbar. In 1767 it fell into the hands of the Sikh chief, Bhai Desu Singh, whose descendants, the Bhais of Kaithal, ranked among the most powerful of the Cis-Sutlej chiefs. Their territories lapsed to the British Government in 1843, when Kaithal became the head-quarters of a District; but in 1849 it was absorbed into Thānesar District, which was in turn included in that of Karnāl in 1862. The now somewhat dilapidated fort or palace of the Bhais stands out prominently on the bank of the tank. The municipality was created in 1867. The income and expenditure during the ten years ending 1902-3 averaged Rs. 19,900 and Rs. 20,400 respectively. The income in 1903-4 was Rs. 15,800, chiefly derived from octroi; and the expenditure was Rs. 17,400. It maintains a dispensary and an Anglo-vernacular middle school. Saltpetre is refined at Kaithal, and it has a considerable manufacture of lacquered wood, besides two cotton factories, one for ginning and the other for ginning and pressing. The number of employés in the factories in 1904 was 103.

Karnāl Town.—Head-quarters of the District and *tahsil* of Karnāl, Punjab, situated in 29° 41' N. and 76° 59' E., on the old bank of the Jumna, about 7 miles from the present course of that river, and on the Delhi-Umballa-Kālka Railway; distant 1,030 miles by rail from Calcutta, 1,056 from Bombay, and 895 from Karāchi. Population (1901), 23,559. Its name is derived from Karna, the rival of Arjuna in the epic of the Mahābhārata, by whom it is said to have been founded. It would seem to have been a place of little importance in early historical times, as no mention of it occurs until towards the end of the Pathān period. Karnāl was plundered in 1573 by Ibrāhīm Husain Mirza in his revolt against Akbar, and its neighbourhood laid waste by Banda Bairāgi in 1709. In 1739

It was from Pānīpat that prince Humāyūn plundered Delhi in 1390, and he was defeated in the neighbourhood by Abū Bakr. Pānīpat was seven years later held for Tātār Khān and taken by Ikbāl Khān, and in the next year deserted on Tīmūr's approach. During the reign of Bahlol Lodī his son Nizām Khān, afterwards Sīkandar Lodī, seized Pānīpat and made it his head-quarters. But its chief title to fame lies in that it was the scene of the three most decisive battles of Northern India: the defeat of Ibrāhīm Lodī by Bābar in 1526, the defeat by Akbar of Hīmū, the Hindu general of Adil Shāh in 1556, and Ahmad Shāh's victory over the Marāthās in 1761. An indecisive battle was also fought at Pānīpat between the Sikhs and the Delhi emperor in 1767. The *pargana* of Pānīpat was made over to General Perron by the Marāthās, and passed to the British in 1803. The chief monument of antiquity is the tomb of the Muhammadan saint Kalandar (also said to be buried at Karnāl), erected by the sons of Alā-ud-dīn of Ghor. Pānīpat was the head-quarters of the District until 1854. The municipality was created in 1867. The income during the ten years ending 1902-3 averaged Rs. 26,400, and the expenditure Rs. 26,200. The income in 1903-4 was Rs. 27,400, chiefly derived from octroi; and the expenditure was Rs. 28,000. Local manufactures include brass vessels, cutlery, and silvered glass; and the town has a cotton press and a combined ginning and pressing factory. The number of operatives employed in 1904 was 500. The Muhammadan community maintains an Arabic school, and the municipality an Anglo-vernacular middle school. The town contains a dispensary.

Pehowa.—Ancient town and place of pilgrimage in the Kaithal *tahsīl* of Karnāl District, Punjab, situated in 29° 59' N. and 76° 35' E., on the sacred Saraswatī river, 16 miles west of Thānesar. It lies in KURUKSHETRA, and its name is a corruption of the Sanskrit Prithūdaka, the 'pool of Prithu,' the son of Rājā Vena. Two inscriptions dating from the end of the ninth century A.D., found at Pehowa, show that it was then included in the dominions of Bhoja and his son Mahendrapāla, kings of Kanauj. The more important inscription records the erection of a triple temple to Vishnu by a Tomar family, but no traces of ancient buildings remain, the modern shrines having been erected within the last century. After the rise of the Sikhs to power Pehowa came into the possession of the Bhais of Kaithal, whose palace is now used as a resthouse; but with Kaithal it lapsed to the British Government, and has since lost its importance, the population having decreased from

on the Delhi-Umballa-Kālka Railway. Population (1901), 5,066. It is famous as the most sacred place in the holy land of KURUKSHETRA, its name meaning 'the place of the god' (*sthāneshwara*). In the time of Hiuen Tsiang, Thānesar was the capital of a Vaisya (Bais) dynasty, which ruled parts of the Southern Punjab, Hindustan, and Eastern Rājputāna. In A.D. 648 a Chinese ambassador was sent to Harshavardhana of Thānesar, but found that the Senāpati Arjuna had usurped his kingdom, and the dynasty then became extinct. Thānesar, however, continued to be a place of great sanctity; but in 1014 it was sacked by Mahmūd of Ghazni, and although recovered by the Hindu Rājā of Delhi in 1043, it remained desolate for centuries. By the time of Sikandar Lodī it had, however, been in some measure restored, for that emperor proposed to make a raid on it to massacre the pilgrims. In 1567 Akbar witnessed its great fair; but Aurangzeb desecrated the shrine and built a castle in its sacred lake, whence his soldiers could fire on pilgrims who attempted to bathe. At the annexation of the cis-Sutlej territory, the town and neighbourhood were in the possession of a Sikh family, but they lapsed to the British Government in 1850. Thānesar was the head-quarters of a British District till 1862, but has since steadily declined in importance. The municipality was created in 1867. The income during the ten years ending 1902-3 averaged Rs. 7,900, and the expenditure Rs. 7,300. The income in 1903-4 was Rs. 8,900, chiefly derived from octroi; and the expenditure was Rs. 8,200. The town has a vernacular middle school and a dispensary. The bathing-fairs held here on the occasion of solar eclipses are sometimes attended by half a million pilgrims.

Ambāla District.—Northernmost of the plains Districts of the Delhi Division, Punjab, lying between $30^{\circ} 2'$ and $30^{\circ} 13'$ N. and $76^{\circ} 19'$ and $77^{\circ} 36'$ E., with an area of 1,851 square miles. It extends from the Sutlej, which separates it from the District of Hoshiārpur on the north, to the Jumna, which divides it from the District of Sahāranpur in the United Provinces on the south-east. On the north-east it is bounded by the States of Nālāgarh, Patīāla, Sirmūr, and Kalsia; on the south by the District of Karnāl; and on the west by Patīāla and the District of Ludhiāna. The District is very irregular in shape, and consists of two almost separate portions. The main portion lies between the Ghaggar and the Jumna, comprising the three *tahsils* of Ambāla, Naraingarh, and Jagādhri. It is formed of the plain which descends from

Boun-
daries, con-
figuration,
and hill
and river
systems.

the Siwālik Hills towards the south-west. This plain is fertile, generally speaking a good alluvial loam, but intersected by torrents, which pour down from the hills at intervals of a few miles; and it is interspersed with blocks of stiff clay soil, which in years of scanty rainfall are unproductive, so that the tract, especially the Naraingarh *tahsil*, is liable to famine. In this part of the District lies the Morni *ilāka*, a hilly tract of about 93 square miles, chiefly made up of two main ridges, and culminating in the Karoh peak (4,919 feet) on the Sirmūr border. It is inhabited by tribes of Hindu Kanets. The second portion of the District is the Rūpar subdivision, which comprises the *tahsils* of Rūpar and Kharar, a submontane plain lying to the north between the Ghaggar and the Sutlej. This plain is of great fertility, highly cultivated, and well wooded, with numerous mango groves; but its south-eastern extremity, which is heavily irrigated from the Ghaggar, is waterlogged, and though of boundless fertility is so unhealthy as to be almost uninhabitable. The District also includes the detached tracts containing the town of Kalka and the hill cantonment of Kasauli.

Besides the great boundary streams of the Sutlej and Jumna, each of whose beds passes through the various stages of boulders, shingle, and sand, the District is traversed in every part by innumerable minor channels. The Ghaggar rises in Sirmūr State, passes through the Morni tract, crosses the District at its narrowest point, and almost immediately enters Patāla; but near the town of Ambāla it again touches British territory, and skirts the border for a short distance. It is largely used for irrigation, the water being drawn off by means of artificial cuts. Among other streams may be mentioned the Chautang, Tangri, Bālāli, Sirvan, Boli, Budki, and Sombh. The Western Jumna Canal has its head-works at Tajewāla in this District, and the Sirhind Canal takes off from the Sutlej at Rūpar.

Geology.

With the exception of the narrow submontane strip running along its north-eastern border, the whole District lies on the Indo-Gangetic alluvium. The submontane tract consists of sandstones and conglomerates, belonging to the Upper Tertiary (Siwālik) series of the Himālayas.

Botany.

The District includes three very different botanical tracts: the southern part, which belongs to the Upper Gangetic plain; the Siwāliks in the north-east; and the Kasauli tract, which rises to over 6,000 feet, and is Outer Himālayan, with a flora much the same as that of Simla below 5,000 feet above sea-

level. The Kalesar forest and the Morni hills generally, which fall in the second tract, have a fairly rich Siwālik flora, with which a few Himālayan types, such as *chir* or *chil* (*Pinus longifolia*), intermingle.

Tigers are occasionally shot in the Kalesar forest and the Morni hills; there are a few bears about Morni, and leopards, hyenas, and wolves are not uncommon, while wild hog abound. Of deer six kinds are found: *sāmbār*, *chital*, and *kākar* in the hill tracts; and 'ravine deer' (Indian gazelle), antelope, and hog deer in the plains.

The climate of the plains is fairly good, though, owing to the nearness of the hills, subject to severe changes of temperature. The average mean temperature of January is 39·45° and of June 77·55°. The hill station of Kasauli, owing to its moderate height and nearness to the dust of the plains, is the least esteemed for climate of the Punjab hill stations. The chief cause of mortality is fever. Swamping, caused by percolation from the Western Jumna Canal, used to affect the health of the people injuriously; but the careful realignment of the canal which has been carried out of recent years has, it is hoped, completely remedied the evil.

Climate
and tem-
perature.

The rainfall varies widely in the hill, submontane, and plain tracts, and the average fall ranges from 28 inches at Rūpar to 61 at Kasauli. The District on the whole is well off in the matter of rainfall, and there are comparatively few years in which the rains fail altogether; the variations from year to year are, however, considerable. The heaviest rainfall recorded during the twenty years ending 1900-1 was 87 inches at Jagādhri in 1884-5, and the lightest was 0·33 inches at Dādūpur in 1889-90.

Rainfall.

The earliest authentic information with reference to this District is derived from the itinerary of Hiuen Tsiang, the Chinese Buddhist pilgrim of the seventh century. He found it the seat of a flourishing and civilized kingdom, having its capital at Srughna, a town identified by General Cunningham with the modern village of SUGH, near Jagādhri. The country around Ambāla from its position felt the full force of every important campaign in Northern India, but receives little mention except as an appurtenance of Sirhind. Such references as occur in the Muhammadan historians are given in the articles on AMBĀLA CITY and RŪPAR TOWN.

History
and archæo-
logy.

The practical interest of the local annals begins with the rise of the Sikh principalities south of the Sutlej during the latter half of the eighteenth century. As the central

power of the Mughal empire relaxed under the blows of the Marāthās on the one side and the Afghāns on the other, numerous Sikh marauders from the Punjab proper began to extend their encroachments beyond the Sutlej, and ere long acquired for themselves the heart of the country between that river and the Jumna. When the Marāthā power fell before the British in 1803, the whole tract was parcelled out among chiefs of various grades, from the powerful Rājās of Patiala, Jind, and Nabha down to the petty *sardār* who had succeeded in securing by violence or fraud the possession of a few villages; but after Ranjit Singh began to consolidate the Sikh territories within the Punjab, he crossed the Sutlej in 1808, and demanded tribute from the Cis-Sutlej chieftains. Thus pressed, and fearing for themselves the fate which had overtaken their brethren, the Sikh chieftains combined to apply for aid to the British Government. The responsibility of protecting the minor States from their powerful neighbour was accepted, and the treaty of 1809, between the British Government and Ranjit Singh, secured them in future from encroachment on the north. Internal wars were strictly prohibited by a proclamation issued in 1811; but with this exception the powers and privileges of the chiefs remained untouched. Each native ruler, great or small, including even the descendants of private troopers of the original invading forces, had civil, criminal, and fiscal jurisdiction within his own territory, subject only to the controlling authority of the Governor-General's Agent at Ambāla. No tribute was taken, nor was any special contingent demanded, although the chieftains were bound in case of war to give active aid to the Government. The right to escheats was the sole return which was asked. The first Sikh War and the Sutlej campaign of 1845 gave Government an opportunity of testing the gratitude of the chieftains. Few of them, however, displayed their loyalty more conspicuously than by abstaining from open rebellion. Their previous conduct had not been such as to encourage Government in its policy towards them; and a sweeping measure of reform was accordingly introduced, for the reduction of their privileges. The Political Agency of Ambāla was transformed into a Commissionership, and police jurisdiction was handed over to European officers. In June, 1849, after the second Sikh War had brought the Punjab under British rule, the chiefs were finally deprived of all sovereign powers. The revenues were still theirs, but the assessments were to be made by British officials and under British regulation. Even

About 62 per cent. of the people are Hindus, 30 per cent. Muhammadans, and 7 per cent. Sikhs. In the Rūpar and Kharar *tahsils* the language is Punjābi, a Hindi *patois* being spoken in the rest of the District.

Castes and
occupa-
tions.

Jāts or Jats (125,000) are the chief landowning tribe. They are divided into two widely different classes, those of the northern *tahsils* being the fine sturdy type found in the Punjab proper, while to the east and south they are inferior in physique and energy. Of the Rājputs (67,000), more than two-thirds are Muhammadans. The Mālis (24,000) and Sainis (26,000) are market-gardening tribes scattered throughout the District, generally as occupancy tenants, though the Sainis hold many villages in Rūpar. The Mālis are nearly all Hindus, the Sainis chiefly Hindus with some Sikhs. The Arains (29,000) are almost all Muhammadans, the Kambohs (9,000) chiefly Hindus or Sikhs. The Gūjars (46,000) are divided almost equally between Hindus and Muhammadans; they chiefly inhabit the Jumna valley and the wild broken tract lying under the hills, and own large herds of goats. In this District the Gūjars have an undeserved reputation as cattle-thieves. In the Morni hills, Kanets (2,500), Koris (4,000), and Brāhmans (44,000) are the chief cultivators. The Kanets claim a Rājput descent, the Koris are of menial status. The whole Morni population are a simple, orderly folk, mixing as little as possible with the people of the plains. The Baniās (29,000) are the most important commercial tribe, but there are also 7,000 Khattris. Of the menial tribes may be mentioned the Chamārs (leather-workers, 113,000), Chūhrās (scavengers, 32,000), Jhlnwars (water-carriers, 31,000), Julāhās (weavers, 20,000), Kumhārs (potters, 9,000), Nais (barbers, 11,000), Tarkhāns (carpenters, 19,000), and Telis (oilmen, 12,000). There are 20,000 Shaikhs, 6,000 Saiyids, 16,000 Fakirs, and 8,000 Jogis and Rāwals. Of the total population, 51 per cent. are supported by agriculture, 19 per cent. are industrial, 4 per cent. commercial, and 3 per cent. professional.

Christian
missions.

The Ludhiāna American Presbyterian Mission has stations at Ambāla city and cantonment, both occupied in 1849, with out-stations at Jagādhri, Mubārakpur, Naraingarh, Raipur, and Mulāna. With a staff of eight missionaries, it supports a high school, a middle school, a school for Muhammadan girls, two for Hindu girls, and a hospital for women. The District contained 959 native Christians in 1901.

General
agricul-

Every *tahsil* except Rūpar contains a large tract of hard clay land, which is fit for cultivation only when the rains are

abundant. Hence the autumn harvest, which is sown by aid of the monsoon rains, is more important than the spring harvest. The insecure parts are those in which this heavy clay soil predominates, chiefly in the Ambāla *tahsil* and in the southern quarter of Kharar. The rest of the four *tahsils* which abut on the Himālayas contain, with a certain proportion of hilly country, large tracts of good alluvial loam; the Rūpar *tahsil* is practically secure; and such insecurity as there is in Naraingarh and Jagādhri is due rather to the character of the Rājput inhabitants than to defects of soil or climate. The District is intersected by numerous watercourses which, though to all appearance dry except after heavy rain, constitute a large reserve of moisture, and even in times of drought enable fairly good crops to be cultivated along them.

The District is held almost entirely on the *pattidāri* and *bhaiyāchārā* tenures; but *samindāri* lands cover about 70 square miles, a larger proportion than in most Districts.

The following table shows the main agricultural statistics in 1903-4, areas being in square miles:—

<i>Tahsil.</i>	Total.	Cultivated.	Irrigated.	Cultivable waste.
Ambāla . . .	355	274	3	38
Rūpar . . .	290	193	28	23
Kharar . . .	370	242	21	28
Naraingarh . .	436	219	5	27
Jagādhri . . .	406	267	14	39
Total	1,857	1,195	71	155

The chief crops of the spring harvest are wheat and gram, which in 1903-4 occupied 309 and 181 square miles respectively. Barley covered only 13 square miles. Maize, the principal crop in autumn, occupied 151 square miles; then came rice (115), pulses (95), great millet (30), and cotton (43). About 2,000 acres were under poppy. In the Morni hills *mandal* (*Eleusine coracana*), *kulthi* (*Dolichos uniflorus*), the tuber *kachālu* (*Arum colocaria*), and ginger are cultivated.

The area under cultivation increased from 1,171 square miles in 1890-1 to 1,195 square miles in 1903-4, in which latter year it was 64 per cent. of the total area of the District. Experiments were carried out in 1887 with a view to introducing natural khāki-coloured (Nankin) cotton as a staple. The cotton was a fine strong plant with a good fibre, and made up well as coarse cloth; but Government decided that it could not take the place of dyed cotton for army purposes, and the

tural conditions.

Chief agricultural statistics and principal crops.

Improvements in agricultural practice.

The Kalesar 'reserved' forest has an area of about 19 square miles, lying principally between two low ranges of hills on the right bank of the Jumna. The chief growth is of *sāl*, but ebony and other trees are also found. This forest contains no bamboo, but a good deal grows south of it. Near Jagādhri is a 'reserved' plantation of *shisham* (*Dalbergia Sissoo*), and at Ambāla a military Reserve of nearly 3 square miles forms the grass farm. The Morni hills are covered with a dense forest growth of scrub mixed with *chāl* (*Pinus longifolia*) and many other valuable trees, including the *harrar* (*Terminalia Chebula*), the fruit of which yields a considerable revenue. In 1903-4 the total forest revenue was Rs. 2,000.

A good deal of limestone is burnt in the Morni hills; but since 1887 the industry has been discouraged, as it was found that much harm was being done to the forest growth by reckless cutting for fuel. The District also possesses some block *kankar* quarries, which were largely used when the Sirhind Canal was under construction; and in the Kharar *tahsil* mill-stones are prepared. Gold is washed in minute quantities in the sand of some of the mountain torrents, especially the Sombh.

Excellent cotton carpets are made at Ambāla; and the town also possessed four ginning factories with 369 employes in 1904, three cotton presses with 180 employes, and two factories in which cotton-ginning is combined with flour-milling, and which between them give employment to 63 hands. The cantonment has two flour-mills, one of which was working in 1904 and gave employment to 54 hands, and a factory for cabinet-making and coach-building with 195 hands. At Sādhaura there is a combined cotton-ginning and pressing factory and flour-mill with 55 employes, and at Khānpur a combined cotton-ginning factory and flour-mill with 40, while the Kālka-Simla Railway workshops at Kālka give employment to 200 operatives. A museum of industrial exhibits has recently been started in a building erected in memory of the late Queen-Empress. Rūpar is famous for small articles of iron-work, and a potter in the town enjoys some celebrity for his clay modelling. The Rūpar canal foundry was closed in 1901. Kharar produces good lacquer-work, and Jagādhri has a well-deserved reputation for its brass-ware. Cotton prints are made in some villages.

Ambāla city is a considerable grain mart, receiving grain and cotton from the Phūlkiān States and Ludhiāna, and exporting them up and down country. It imports English

Arts and
manufac-
tures.

Commerce
and trade.

cloth and iron from the south, and salt, wood, and woollen and silk manufactures from elsewhere; and exports cotton goods, especially carpets. It has a considerable trade in hill products, such as ginger, turmeric, potatoes, opium, and *charas*; and Simla and Kasauli are largely supplied from it with various necessities. Rūpar is also an important mart for commerce between the hills and the plains, and has a considerable traffic in grain, sugar, and indigo; salt is imported and sent to the hills in exchange for iron, ginger, turmeric, and potatoes, and country cloth is manufactured in the town and exported to the hills. Jagādhri carries on a considerable trade in metals, importing copper and iron and exporting the manufactured products. It is also a centre of the borax trade. During the American Civil War, a cotton mart was established at Kurāli, where 5 lakhs' worth is still reported to change hands yearly.

Railways
and roads.

The North-Western Railway from Sahāranpur to Lahore and the Delhi-Umballa-Kālka line cross each other at Ambāla city, the latter being continued by the narrow-gauge Kālka-Simla line. The grand trunk road passes through Ambāla, where the Kālka road for Simla leaves it. The only other important metalled roads are from Abdullāhpur (via Jagādhri) to Chhachhrauli, the capital of the State of Kalsia, and from Būriya to Jagādhri. The total length of metalled roads is 103 miles, and of unmetalled roads 404 miles. Of these, 87 miles of metalled and 32 miles of unmetalled roads are under the Public Works department, and the rest are maintained by the District board. Both the Sirhind and Western Jumna Canals are navigable, taking to a large extent the place of the rivers which they drain almost dry except in the summer months. The Jumna is crossed by a ferry, which is replaced in the cold season by a bridge of boats, and the Sutlej by three ferries.

Famine.

Ambāla District has only once suffered from serious famine since its formation in 1847. This was in 1860-1, when wheat rose to 8 seers a rupee. Regarding the distress in 1868-9 very little is recorded. The total number of persons employed on relief works was 46,000, and 57,000 received gratuitous relief. Only about Rs. 2,500 was spent from subscriptions, to which Government added as much again. The crops failed in 1884-5 and 1890. The famine of 1896-7 was due, not so much to any actual failure of the crops in the District (though the spring harvest of 1897 was the third poor harvest in succession), as to the state of the grain market all over India. For months together the prices of all food-grains stood at about 10 seers per rupee in rural tracts; and in the towns, when prices were

secondary and 99 primary (public) schools, and 3 advanced and 69 elementary (private) schools, with 421 girls in the public and 393 in the private schools. The Mission school in Ambāla city was the only high school of the District until Government opened one at Jagādhri. The District possesses six girls' schools. The total expenditure on education in 1903-4 was 2.4 lakhs, of which the greater part was provided by Imperial and Provincial funds and endowments.

The District contains a hospital at Ambāla city, and seven outlying dispensaries. In 1904 a total of 98,679 out-patients and 1,982 in-patients were treated at these institutions, and 8,697 operations performed. The aggregate expenditure was Rs. 21,000, which was met in nearly equal shares by District and municipal funds, assisted by a grant from Government of Rs. 2,000. A description of the Pasteur Institute and Research Laboratory will be found under KASAULI. There is a leper asylum at Ambāla under the American Presbyterian Mission. The Philadelphia Hospital for women at Ambāla is also under American management. Hospitals and dispensaries.

The number of successful vaccinations in 1903-4 was 15,708, representing 20 per 1,000 of the population. Vaccination is compulsory in Ambāla city and Rūpar town.

[A. Kensington, *Customary Law of Ambāla District* (1893), *District Gazetteer* (1892-3), and *Settlement Report* (1893); J. M. Douie, *Settlement Report of Karnāl-Ambāla* (1891).]

Ambāla Tahsil.—South-western *tahsil* of Ambāla District, Punjab, lying between 30° 7' and 30° 27' N. and 76° 33' and 77° 12' E., with an area of 355 square miles. The population in 1901 was 218,006, compared with 230,567 in 1891. The head-quarters are at the city of AMBĀLA (population, 78,638). It also contains 295 villages. The land revenue and cesses amounted in 1903-4 to 2.8 lakhs. The *tahsil* lies in the open plain, and the hard clay subsoil is almost everywhere covered with alluvial loam.

Rūpar Subdivision.—Subdivision of Ambāla District, Punjab, comprising the *tahsils* of RŪPAR and KHARAR. Kharar contains the cantonment and sanitarium of KASAULI and the 'notified area' of KĀLKA.

Rūpar Tahsil.—Northern *tahsil* of Ambāla District, Punjab, lying at the foot of the Himālayas, between 30° 45' and 31° 13' N. and 76° 19' and 76° 44' E., with an area of 290 square miles. It is bounded on the north by the Sutlej river, and forms part of the Rūpar subdivision. On the north-east the *tahsil* runs up into the Lower Siwāliks, and along the

The *tahsil* includes a small tract of hilly country in the Siwāliks. On the east lie the Jumna lowlands. The rest is generally level or gently undulating, and is intersected by torrent-beds.

Manauli.—Estate in the Kharar and Rāpār *tahsils* of Ambāla District, Punjab, with an area of 11 square miles. It was the principal *jāgīr* held till recently by a member of the Faizullahpuria or Singhpuria family, which was one of the twelve great Sikh *misl*s or confederacies. Founded early in the eighteenth century by Kapūr Singh, a Jat of Amritsar District, the family played a great part in the Jullundur Doāb under his great-nephew, Budh Singh. In 1811, however, the Singhpurias were expelled from their territories north of the Sutlej by Ranjit Singh's generals, and confined to the estates south of that river, which they still hold. From 1809 to 1846 the family ranked as independent protected chiefs, but they lost their status in the latter year. The last owner, Sardār Raghubīr Singh, held 81 villages in *jāgīr*. These yield a net revenue of Rs. 36,000, and the *sardār* had also other estates. After his death in 1904, the *jāgīr* was divided among a number of his relatives.

Ambāla City.—Head-quarters of the District and *tahsil* of Ambāla, Punjab, situated in 30° 23' N. and 76° 46' E., on the North-Western Railway and the grand trunk road, at the point where they are crossed by the Delhi-Umballa-Kāka Railway; distant by rail from Calcutta 1,077 miles, from Bombay 1,105 miles, and from Karāchi 848 miles. The population (1901) is 78,638: namely, Hindus, 39,601; Sikhs, 2,168; Muhammadans, 32,149; and Christians, 3,610—of whom 50,438 reside in cantonments. Ambāla is chiefly important as being one of the largest cantonments in India. The garrison, which is under the General Officer commanding the Lahore division, consists of one battery of horse artillery, with an ammunition column; one regiment of British and two regiments of native cavalry; and three regiments of British and one battalion of native infantry. The cantonment also contains a mounted infantry school, companies of the Army Hospital and Bearer corps, and detachments of the Punjab Light Horse and the North-Western and East Indian Railway Volunteers.

The native quarter, which has a separate station on the North-Western Railway, lies four miles north-west of the cantonment. Its name is possibly derived from its mythical founder Amba, but is more probably a corruption of Ambwāla, the 'mango village.' It was of no importance before the lapse of the Ambāla estate in 1823, when it became the residence of

a Cantonment Magistrate assisted by a cantonment committee; the Cantonment Magistrate proceeds on tour for ten days in each month of the hot season, and is relieved of the charge of the treasury by the Assistant Commissioner in charge of the Rūpar subdivision. The Deputy-Commissioner of Ambāla also resides at Kasauli during part of the hot season. There is an Anglo-vernacular middle school. The Lawrence Military Asylum at Sanāwar is 3 miles away, in a portion of territory attached to Simla District. The income and expenditure of cantonment funds during the ten years ending 1902-3 averaged Rs. 13,000.

The Pasteur Institute at Kasauli was established in 1901 for the treatment of persons bitten by rabid animals, and now treats patients from all parts of Northern India. In 1906 a central Research Institute was founded, which will provide means for the scientific study of the etiology and nature of disease in India, in addition to the preparation of curative sera for the diseases of man and the training of scientific workers. The institution is in charge of a Director, with a staff of assistants. Kasauli is also the head-quarters of the Punjab Nursing Association, and contains a dispensary. There is a brewery in the neighbourhood.

Rūpar Town.—Head-quarters of the subdivision and *tahsil* of the same name in Ambāla District, Punjab, situated in 30° 58' N. and 76° 32' E., at the point where the Sutlej issues from the hills. Population (1901), 8,888. It is a town of considerable antiquity, originally called Rūpnagar after its founder Rāja Rūp Chand. It was occupied about 1763 by Hari Singh, a Sikh chieftain, who seized upon a wide tract south of the Sutlej, stretching along the foot of the Himalayas. In 1792 he divided his estates between his two sons, Charrat Singh and Dewa Singh, the former of whom obtained Rūpar. The estates were confiscated in 1846, in consequence of the part taken by the family during the Sikh War of the preceding year. The head-works of the Sirhind Canal are situated here, and the town is an important mart of exchange between the hills and the plains. Salt is imported from the Khewra mines and re-exported to the hills, in return for iron, ginger, potatoes, turmeric, opium, and *charas*. Cotton twill (*sūsi*) is largely manufactured, and the smiths of Rūpar have a reputation for locks and other small articles of iron. Rūpar was the scene of the celebrated meeting between Lord William Bentinck and Ranjit Singh in 1831. There are two important religious fairs, one Hindu, one Muhammadan. The municipality was

created in 1867. The income during the ten years ending 1902-3 averaged Rs. 12,100, and the expenditure Rs. 11,400. The income in 1903-4 was Rs. 14,500, chiefly from octroi; and the expenditure was Rs. 16,900. There are three Anglo-vernacular middle schools and a dispensary.

Sādhaura.—Town in the Naraingarh *tahsil* of Ambāla District, Punjab, situated in 30° 23' N. and 77° 13' E., at the foot of the outlying range of the Himālayas. Population (1901), 9,812. It dates from the time of Mahmūd of Ghazni, and contains a mosque built in the reign of Shāh Jahān. A fair held yearly at the shrine of the Muhammadan saint, Shāh Kumais, is attended by 20,000 or 30,000 persons. There is some manufacture of cotton cloth; and the town possesses a steam printing press, and a combined cotton-ginning and pressing factory, which in 1904 employed 55 hands. The municipality was created in 1885. The income during the ten years ending 1902-3 averaged Rs. 6,800, and the expenditure Rs. 6,400. The income in 1903-4 was Rs. 7,300, chiefly from octroi; and the expenditure was Rs. 8,100. There is a vernacular middle school and a dispensary.

Sugh (*Srughna*).—Village in the Jagādhri *tahsil* of Ambāla District, Punjab, situated in 30° 9' N. and 77° 23' E., in a bend of the old bed of the Jumna, now a part of the Western Jumna Canal, close to Jagādhri and Būriya towns. Population (1901), 378. Srughna is mentioned by Hiuen Tsiang, the Chinese pilgrim of the seventh century, as a town 3½ miles in circuit, the capital of a kingdom and seat of considerable learning, both Buddhistic and Brāhmanical. He describes the kingdom of Srughna as extending to the mountains on the north, and to the Ganges on the east, with the Jumna flowing through the midst of it. The capital he represents as having been partly in ruins; but General Cunningham thought that there is evidence in the coins found on the spot to show that it was occupied down to the time of Muhammadan conquest. He thus describes the extent and position of the ruins:—

‘The village of Sugh occupies one of the most remarkable positions that I have seen during the whole course of my researches. It is situated on a projecting triangular spur of high land, and is surrounded on three sides by the bed of the old Jumna, which is now the Western Jumna Canal. On the north and west faces it is further protected by two deep ravines, so that the position is a ready-made stronghold, which is covered on all sides, except the west, by natural defences. In shape it is almost triangular, with a large projecting fort or

citadel at each of the angles. The site of the north fort is now occupied by the castle and village of Dayālgarh. The village of Amadalpur stands on the site of the south-east fort, and that of the south-west is unoccupied. Each of these forts is 1,500 feet long and 1,000 feet broad, and each face of the triangle which connects them together is upwards of half a mile in length, that to the east being 4,000 and those to the north-west and south-west 3,000 feet each. The whole circuit of the position is therefore 22,000 feet or upwards of 4 miles, which is considerably more than the $3\frac{1}{2}$ miles of Hiuen Tsiang's measurement. But as the north fort is separated from the main position by a deep sandy ravine, called the Rohāra nullah, it is possible that it may have been unoccupied at the time of the pilgrim's visit. This would reduce the circuit of the position to 19,000 feet or upwards of $3\frac{1}{2}$ miles, and bring it into accord with the pilgrim's measurement. The small village of Sugh occupies the west side of the position, and the small town of Būriya lies immediately to the north of Dayālgarh.'

Boun-
daries, con-
figuration,
and hill
and river
systems.

Simla District (Shamla).—District in the Delhi Division of the Punjab, consisting of nine small tracts lying among the SIMLA HILL STATES, between $30^{\circ} 58'$ and $31^{\circ} 22'$ N. and $77^{\circ} 7'$ and $77^{\circ} 43'$ E., with a total area of 101 square miles. The town lies on the spurs which run down from Jakko hill, and occupies an area of only 6 square miles. North-east of it lie the *parganas* of Kot Khai and Kotgarh, the former 32 miles by road from Simla in the valley of the Giri, the latter 22 miles (50 by road) on a northern spur of the Hātu range overlooking the Sutlej valley. The Bharauli tract is a narrow strip of hill country, extending from Sabāthu to Kiārighāt, about 8 miles long and from 2 to 6 wide. Besides these tracts, the cantonments of Jutogh, Sabāthu, Solon, Dagshai, and Sanāwar, the site of the Lawrence Military Asylum, are included in the District.

The hills and the surrounding Native States compose the southern outliers of the great central chain of the Western Himālayas. They descend in a gradual series from the main chain itself in Bashahr State to the general level of the Punjab plain in Ambāla District, thus forming a transverse south-westerly spur between the great basins of the Ganges and the Indus, here represented by their tributaries, the Jumna and the Sutlej. A few miles north-east of Simla the spur divides into two main ridges, one of which curves round the Sutlej valley towards the north-west, while the other, crowned by the sanitarium of Simla, trends south-eastward to a point a few miles north of Sabāthu, where it merges at right angles in the mountains of the Outer or Sub-Himālayan system, which run parallel to the principal range. South and east of Simla, the

hills between the Sutlej and the Tons centre in the great peak of CHAUR, 11,982 feet above the sea. Throughout all the hills forests of *deodār* abound, while rhododendrons clothe the slopes up to the limit of perpetual snow. The scenery in the immediate neighbourhood of Simla itself presents a series of magnificent views, embracing on the south the Ambāla plains, with the Sabāthu and Kasauli hills in the foreground, and the massive block of the Chaur a little to the left, while just below the spectator's feet a series of huge ravines lead down into the deep valleys which score the mountain-sides. Northwards, the eye wanders over a network of confused chains, rising range above range, and crowned in the distance by a crescent of snowy peaks, which stand out in bold relief against the clear background of the sky. The principal rivers of the surrounding tracts are the Sutlej, Pabar, Giri Gangā, Gambhar, and Sarsa.

The rocks found in the neighbourhood of Simla belong Geology. entirely to the carbonaceous system and fall into four groups—the Krol, the infra-Krol, the Blaini, and the infra-Blaini, or Simla slates. The Simla slates are the lowest beds seen; they are succeeded by the Blaini group, consisting of two bands of boulder-slate, separated by white-weathering slates (bleach slates), and overlain by a thin band of pink dolomitic limestone. The Blaini group is overlain by a band of black carbonaceous slate, which follows the outcrop of the Blaini beds. The overlying beds consist of a great mass of quartzite and schist, known as the Boileauganj beds; they cover the greater part of Simla and extend to Jutogh. Above these is the Krol group, consisting of carbonaceous slates and carbonaceous and crystalline limestones, with beds of hornblende-garnet schist which probably represent old volcanic ash-beds; they are largely developed in Prospect Hill and Jutogh. Intrusive diorite is found among the lower limestones of the Krol group on the southern slopes of Jutogh. No fossils have been found in any of these rocks, and in consequence their geological age is unknown¹.

In the *Flora Simlensis* (edited by Mr. W. B. Hemsley), the Botany. late Sir Henry Collett has enumerated 1,237 species of trees and flowering plants; but this number would be raised considerably if a botanical census of the smaller Native States

¹ McMahon, 'The Blaini Group and Central Gneiss in the Simla Himalayas,' *Records, Geological Survey of India*, vol. x, part iv; Oldham, 'Geology of Simla and Jutogh,' *ibid.*, vol. xx, part ii; *Manual of Geology of India*, second edition, p. 132 (The Carbonaceous System).

Rājās till the beginning of the nineteenth century. After the encroachments of the Gurkhas had led to the invasion of their dominions in 1815, the British troops remained in possession of the whole block of hill country between the Sārdā and the Sutlej. Kumaon and Dehra Dūn became a portion of British territory; a few separate localities were retained as military posts, and a portion of Keonthal State was sold to the Rājā of Patāla. With these exceptions, however, the tract conquered in 1815 was restored to the hill chiefs, from whom it had been wrested by the Gurkhas. Garhwāl State became attached to the United Provinces; but the remaining principalities rank among the dependencies of the Punjab, and are known collectively as the SIMLA HILL STATES. From one or other of these the plots composing the little District of Simla have been gradually acquired. Part of the hill over which the Simla hill station spreads was retained by Government in 1816, and an additional strip of land was obtained from Keonthal in 1830. The spur known as Jutogh, $3\frac{1}{2}$ miles from the centre of the station, was acquired by exchange from Patāla in 1843, as the equivalent of two villages in Bharauli. Kot Khai and Kotgarh, again, fell into our hands through the abdication of the Rāna, who refused to accept charge of the petty State. Sabāthu hill was retained from the beginning as a military fort; and the other fragments of the District have been added at various dates. As a result of some administrative changes made in 1899, Kasauli and Kālka, which till then belonged to the District, were transferred to Ambāla.

The District contains 6 towns and 45 villages. The population at each of the three enumerations was: (1881) 36,119, (1891) 35,851, and (1901) 40,351. It increased by 12.6 per cent. in the last decade. These enumerations having been made in the winter do not give an adequate idea of the summer population, which in Simla town alone was in the season of 1904, 45,587 (municipal limits 35,250, outside area 10,337). The District is divided into the two sub-*tahsils* of SIMLA-cum-BHARAULI and KOT KHAI-cum-KOTGARH, with head-quarters at Simla and Kot Khai respectively. The only town of importance is SIMLA, the summer head-quarters of the Government of India; the cantonments have already been mentioned. The village population is almost entirely Hindu, the few Muhammadans which it includes being for the most part travellers. The density of population is 399.5 persons to the square mile. The language spoken in the villages is Pahāri.

The Kanets (9,000) are by far the most important element Castes and

occupations.

in the rural population. Like all hill tribes, they are a simple-minded orderly people, quiet and peaceful in their pursuits and submissive to authority. The Dāgs and Kolis (4,000) are the principal menial tribes. About 39 per cent. of the total population are returned as agricultural.

Christian missions.

The Simla Baptist Mission was started in 1865. The American Presbyterian Mission has an out-station at Sabāthu, occupied in 1837, and supports a leper asylum and various schools. The Kotgarh branch of the Church Missionary Society, established in 1840, is an itinerant mission to the hill tribes. The Church Missionary Society also has a branch, with a mission church, in Simla, and the Society for the Propagation of the Gospel Zanāna Mission has a station. In 1901 the District contained 368 native Christians.

General agricultural conditions.

Cultivation is carried on in all the lower valleys. Wherever the slope of the ground will permit, fields are built up in terraces against the hill-side, the earth often having to be banked up with considerable labour. The only classification of soil recognized by the people is that depending on irrigation and manure; lands irrigated or manured generally yield two crops in the year, while the poor sloping fields lying at some distance from the homestead, and neither irrigated nor manured, yield only catch-crops either of wheat or barley in the spring or of the inferior autumn grains. Every husbandman has, besides his plot of cultivated land, a considerable area of grass land which is closed to grazing when the monsoon rains begin, and reaped in October and November.

Chief agricultural statistics and principal crops.

The area dealt with in the revenue returns of 1903-4 was 77 square miles, of which 36 per cent. were not available for cultivation, 44 per cent. were cultivable waste other than fallows, and 9,956 acres, or 20 per cent., were cultivated. The chief crop of the spring harvest is wheat, which occupied 3,586 acres in that year; the area under barley was 1,534 acres; practically no gram is grown. There were 274 acres under poppy. Maize and rice, the principal staples of the autumn harvest, covered 1,560 and 875 acres respectively. Of millets *china* and *mandal* (*Eleusine coracana*), and of pulses *māsh* (*Phaseolus radiatus*) and *kulthi* (*Dolichos uniflorus*), are the most common. Potatoes, hemp, turmeric, and ginger are largely cultivated. Tea is grown at Kotgarh, where 51 acres were picked in 1904. No increase worth mention has occurred in the cultivated area during the last ten or fifteen years; the demand made by the expansion of Simla town on the surrounding hills being rather for grass, wood, and labour than for

Improvements in agricultural practice.

agricultural produce. Practically no advances are taken by the people from Government. The cattle are of the small mountain breed. Very few ponies are kept, and the sheep and goats are not of importance. Of the total area cultivated in 1903-4, 745 acres, or nearly 7 per cent., were irrigated by small channels, by which the waters of the hill streams are led to and distributed over the terraced fields.

Cattle,
ponies, and
sheep.
Irrigation.

Forests of timber abound, but only a small part of the Simla Forest division lies within British territory, the greater portion being leased from the Rājās of the various States. In 1903-4 the District contained 13 square miles of 'reserved' and 510 acres of unclassified forest under the Forest department, and 33 square miles of unclassified forest and Government waste lands under the control of the Deputy-Commissioner. It also contains 457 acres of 'reserved' and 2,678 of unclassified forest belonging to the Simla municipality and preserved as the catchment area for the Simla water-supply. In 1903-4 the total revenue of the forests under the Forest department was Rs. 10,000.

Forests.

The only mineral product of importance is iron, which is found in the Kot Khai tract and smelted roughly by the natives.

Minerals.

Most of the artistic industries of Northern India are represented in Simla town by artisans who come up for the season, but very few really belong to the District. Shawls are made at Sabāthū by a colony of Kashmiris; basket-weaving and some rough iron-smelting at Kot Khai are the only indigenous arts.

Arts and
manufac-
tures.

There is a considerable trade with Chinese Tibet, which is registered at Wangtu, near Kotgarh. Most of the trade, however, is with Rāmpur in Bashahr. Imports are chiefly wool, borax, and salt; and the exports are cotton piece-goods. The principal imports from the plains are the various articles of consumption required by the residents at Simla.

Commerce
and trade.

The Kālka-Simla Railway (2 feet 6 inches gauge) has its terminus at Simla, which is also connected with Kālka by a cart-road and a road through Kasauli. The Hindustān-Tibet bridle-road leads from Simla to Rāmpur and Chini in Bashahr, and a road from Sultānpur in Kulū joins this at Nārkaṇḍa, forming the easiest line of communication between Simla and Leh. A road to Mussoorie branches off from that to Rāmpur. Another runs westwards to Bilāspur, whence it leads to Mandi and Suket on one side, and to Nadaun and Kāngra on the other. Sabāthū, Dagshai, Solon, Sanāwar, and Kasauli are all connected by cross-roads.

Railways
and roads.

Famine. The District has never been visited by famine, the rainfall being constant and the crops always sufficient for the wants of its small agricultural population.

District subdivisions and staff. The two sub-*tahsils*, SIMLA-cum-BHARAULI and KOT KHAI-cum-KOTGARH, are each under a *naib-tahsildār*. The Deputy-Commissioner, who is also Superintendent of Hill States, is aided by two Assistant or Extra Assistant Commissioners, of whom one is in charge of the District treasury. Simla and the Hill States form an executive division of the Public Works department, and also a Forest division.

Civil justice and crime. The Deputy-Commissioner as District Magistrate is responsible for the criminal justice of the District; civil judicial work is under a District Judge; and both officers are supervised by the Divisional Judge of the Ambāla Civil Division (who is also Sessions Judge). The District Judge is also Judge of the Small Cause Courts of Simla and Jutogh. The Cantonment Magistrate of Kasauli, Jutogh, Dagshai, Solon, and Sabāthu has jurisdiction throughout the District. He also has the powers of a Small Cause Court in all these cantonments except Jutogh. The station staff officers of Dagshai, Solon, Sabāthu, and Jutogh are appointed magistrates of the third class in the District, but only exercise powers within their own cantonments. The District is free from serious crime.

Land revenue administration. Little is known of the revenue systems which obtained in the Simla hills before annexation. After various summary settlements made between 1834 and 1856, a regular settlement was made between 1856 and 1859, the rates varying between Rs. 5-14-0 per acre on the best irrigated land, and R. 0-3-8 on the worst kind of 'dry' land. In 1882 the assessment was revised by Colonel Wace; an increase of 36 per cent. in Kotgarh and Kot Khai, and 20 per cent. in Bharauli, was taken, while the assessment of Simla was maintained. The people are prosperous and well-to-do, and the revenue is easily paid. The demand in 1903-4, including cesses, amounted to Rs. 21,000. The average size of a proprietary holding is 1.2 acres.

The collections of land revenue alone and of total revenue are shown below, in thousands of rupees:—

	1880-1.	1890-1.	1900-1.	1902-3.
Land revenue .	14	17	42	17
Total revenue .	1.44	1.81	4.07	3.77

Local and municipal. SIMLA is the only municipality in the District, though the Deputy-Commissioner exercises the functions of a municipal

committee in KASUMPTI, and those of a District board throughout the District. The income of the District fund, derived mainly from a local rate of Rs. 9-5-4 per cent. on the revenue, except in the Simla and Kotgūru *parganas*, where the rate is Rs. 8-5-4, amounted in 1903-4 to Rs. 2,767, and the expenditure to Rs. 1,971, more than half being devoted to education.

The regular police force consists of 315 of all ranks, including 11 cantonment and 128 municipal police, under a Superintendent, who is usually assisted by two inspectors. There are three police stations and one outpost. The District jail at head-quarters has accommodation for 44 male and 12 female prisoners.

Police and
jails.

The District stands first among the twenty-eight Districts of the Province in respect of the literacy of its population. In 1901 the proportion of literate persons was 17.4 per cent. (22.2 males and 8.5 females). The number of pupils under instruction was 827 in 1880-1, 2,077 in 1900-1, and 1,881 in 1903-4. In the last year the District possessed 12 secondary, 16 primary (public) schools, and 10 elementary (private) schools, with 492 girls in the public and 42 in the private schools. Most of these are in Simla town. The Lawrence Asylum at Sanāwar, founded in 1847 by Sir Henry Lawrence for the children of European soldiers, and now containing some 450 boys and girls, is supported by the Government of India. The total expenditure on education in the District in 1903-4 was 3.7 lakhs, 1.6 lakhs being derived from Provincial revenues and 1.1 lakhs from fees.

Education.

Besides the Ripon Hospital and the Walker Hospital in Simla town, the District has one out-lying dispensary at Kot Khai. In 1904 these three institutions treated a total of 26,032 out-patients and 1,365 in-patients, and 2,399 operations were performed. The expenditure was Rs. 68,000, derived almost entirely from municipal funds and sale of securities.

Hospitals
and dis-
pensaries.

The number of successful vaccinations in 1903-4 was 641, representing 18 per 1,000 of the population. Vaccination is compulsory in Simla town.

Vaccina-
tion.

[D. C. J. Ibbetson, *Gazetteer* (1883-4, under revision); E. G. Wace, *Settlement Report* (1884); H. F. Blanford, *The Silver Ferns of Simla and their Allies* (1886); Sir H. Collett, *Flora Simlensis* (1902); E. J. Buck, *Simla, Past and Present* (1904).]

Simla-cum-Bharauli.—These two isolated tracts form a sub-*tahsil* of Simla District, Punjab, lying between 30° 58' and 31° 8' N. and 77° 1' and 77° 15' E., with an area of

25 square miles. It is bounded on all sides by the Simla Hill States. The population in 1901 was 29,668, compared with 25,405 in 1891. SIMLA (population, 13,960) is the head-quarters, and there are 35 villages. The land revenue and cesses amounted in 1903-4 to Rs. 7,000. The sub-*tahsil* lies entirely in the hills.

Kot Khai-cum-Kotgarh (*Kotguru*).—These two tracts form a sub-*tahsil* of Simla District, Punjab, lying between $31^{\circ} 4'$ and $31^{\circ} 22'$ N. and $77^{\circ} 29'$ and $77^{\circ} 43'$ E., with an area of 52 square miles. It is bounded on all sides by the Simla Hill States. The population in 1901 was 10,683, compared with 11,581 in 1891. Kot Khai is the head-quarters. There are ten villages, and the land revenue and cesses amounted in 1903-4 to Rs. 14,000. The sub-*tahsil* lies entirely in the hills, which, in Kot Khai especially, are covered with forests. Kotgarh stands on a spur of the Hātu range overlooking the Sutlej.

Dagshai.—Hill cantonment in Simla District, Punjab, situated in $30^{\circ} 53'$ N. and $77^{\circ} 4'$ E., overlooking the cart-road from Kalka to Simla, and 40.4 miles from the latter station. The land was given in 1847 by the Mahārājā of Patiala. Dagshai is the head-quarters of a British infantry regiment, and a detachment of British infantry from the Ambāla garrison is quartered there during the summer months. Population (March, 1901), 2,159.

Jutogh.—Hill cantonment in Simla District, Punjab, situated in $31^{\circ} 7'$ N. and $77^{\circ} 7'$ E., about a mile from the western extremity of the station of Simla. The land was acquired from Patiala in 1843. During the summer months one battery of British mountain artillery and two companies of the regiment quartered at Sabāthu are stationed here. Population (March, 1901), 375.

Kasumpti.—Suburb of Simla station, Punjab. It lies within the territory of the Rājā of Keonthal, but being practically part of Simla was leased from the Rājā in 1884, and constituted a separate municipality, whose functions are performed by the Deputy-Commissioner of Simla. The municipal income and expenditure during the ten years ending 1902-3 averaged Rs. 5,600. The income in 1903-4 was Rs. 6,200, chiefly from taxes on houses and lands; and the expenditure was Rs. 6,300. Population (March, 1901), 170.

Sabāthu (*Subāthu*).—Hill cantonment in Simla District, Punjab, situated in $30^{\circ} 59'$ N. and $77^{\circ} 0'$ E., on a table-land at the extremity of the Simla range, overlooking the Ghambhar

river. It lies above the old road from Kalka to Simla, 9 miles from Kasauli and 23 from Simla station. Sabāthu has been held as a military post since the close of the Gurkha War in 1816, and a detachment of a British infantry regiment is usually stationed here. There is a small fort above the parade-ground, formerly of military importance, now used as a store-room. The American Presbyterian Mission maintains a school, and an asylum for lepers is supported by voluntary contributions. Elevation above sea-level, 4,500 feet. Population (1901), 2,177.

Simla Town.—Head-quarters of Simla District, Punjab, and summer capital of the Government of India, situated on a transverse spur of the Central Himalayan system, in $31^{\circ} 6'$ N. and $77^{\circ} 10'$ E., at a mean elevation above sea-level of 7,084 feet. It is distant by rail from Calcutta 1,176 miles, from Bombay 1,112 miles, and from Karāchi 947 miles; from Kalka, at the foot of the hills, by cart-road, 58 miles. The population of the town (excluding Jutogh and Kasumpti) was: (1881) 12,305, (1891) 13,034, (1901) 13,960, enumerated in February or March when it was at its lowest. At a municipal census taken in July, 1904, the population within municipal limits was returned at 35,250. Of the population enumerated in 1901, Hindus numbered 8,563, Muhammadans 3,545, Sikhs 346, Christians 1,471, and Jains and Pārsis 35.

A tract of land, including part of the hill now crowned by the station, was retained by the British Government at the close of the Gurkha War in 1816. Lieutenant Ross, Assistant Political Agent for the Hill States, erected the first residence, a thatched wooden cottage, in 1819. Three years afterwards, his successor, Lieutenant Kennedy, built a permanent house. Officers from Ambāla and neighbouring stations followed the example, and in 1826 the new settlement had acquired a name. A year later, Lord Amherst, the Governor-General, after completing his progress through the North-West on the conclusion of the successful Bharatpur campaign, spent the summer at Simla. From that date the sanitarium rose rapidly into favour with the European population of Northern India. Year after year, irregularly at first, but as a matter of course after a few seasons, the seat of Government was transferred for a few weeks in every summer from the heat of Calcutta to the cool climate of the Himalayas. Successive Governors-General resorted with increasing regularity to Simla during the hot season. Situated in the recently annexed Punjab, it formed an advantageous spot for receiving the great chiefs

neighbourhood has been described in the article on SIMLA DISTRICT.

Simla, besides being the summer head-quarters of the Governments of India and of the Punjab, and of the various Departments of Army head-quarters, is the head-quarters of the Deputy-Conservator of Forests, Simla division, and the Executive Engineer, Simla division, as well as of the ordinary District staff, and the summer head-quarters of the Commissioner of the Delhi Division. A battalion of Volunteers, the 2nd Punjab (Simla) Rifles, is stationed here. There are four churches of the Church of England: Christ Church (the Station Church) opened in 1844, a chapel of ease at Boileauganj, a chapel attached to Bishop Cotton School, and a native church in the bazar. There are also a Roman Catholic cathedral and two convents, and an undenominational church following the Presbyterian form of worship. The Church Missionary Society, the Society for the Propagation of the Gospel Zanana Mission, and the Baptist Mission have branches in the town. There are two masonic lodges. Simla also contains the United Service Institution of India, and a large club. The Government offices are for the most part accommodated in large blocks of buildings; and a town hall contains a theatre, reading-room, and ball-room. Annandale, the Simla cricket ground and racecourse, has recently been greatly enlarged. The municipality was created in 1850. The income during the ten years ending 1902-3 averaged 4.2 lakhs, and the expenditure 4.1 lakhs. The income in 1903-4 was 5.5 lakhs, chiefly derived from octroi (1.7 lakhs), taxes on houses and lands (1.3 lakhs), municipal property and fines, &c. (Rs. 51,000), and loans from Government (Rs. 39,000). The expenditure of 5.4 lakhs included: general administration (Rs. 57,000), water-supply (Rs. 89,000), conservancy (Rs. 33,000), hospitals and dispensaries (Rs. 36,000), public safety (Rs. 37,000), public works (1 lakh), interest on loans (Rs. 53,000), and repayment of loans (Rs. 64,000). Water is supplied to the station by a system of water-works constructed at a cost of about 6 lakhs, and supposed to be capable of supplying a minimum of 300,000 gallons a day. The supply is not, however, sufficient for the rapidly growing needs of the town. A drainage system is now being extended at a cost of nearly 6 lakhs. The consolidated municipal debt amounts to about 12 lakhs.

The commerce of Simla consists chiefly in the supply of necessities to the summer visitors and their dependants, but

JULLUNDUR DIVISION

Jullundur Division (*Jālandhar*).—A Division of the Punjab, stretching from the borders of Tibet on the north-east across the valleys of the Upper Beās and the Sutlej to the borders of the Bikaner desert on the south-west. It lies between $29^{\circ} 55'$ and $32^{\circ} 59'$ N. and $73^{\circ} 52'$ and $78^{\circ} 42'$ E. The Commissioner's head-quarters are at the town of Jullundur. The Division comprises all varieties of scene and soil, from the tumbled masses of the Outer Himālayas, in Kulū and Kāngra, to the fertile plains of Jullundur or the arid tracts of Ferozepore. The population increased from 3,787,945 in 1881 to 4,217,670 in 1891, and to 4,306,662 in 1901. The area is 19,410 square miles, and the density of population 222 persons per square mile, as compared with 209 for the Province as a whole. In 1901 Hindus formed 52 per cent. of the population (2,242,490), while other religions included 1,457,193 Muhammadans, 591,437 Sikhs, 5,562 Jains, 4,176 Buddhists, 33 Pārsīs, and 5,766 Christians (of whom 1,919 were natives). The Division contains five Districts, as shown below :—

District.	Area in square miles.	Population (1901).	Land revenue and cesses (1903-4), in thousands of rupees.
Kāngra . . .	9,978	768,124	10,73
Hoshiārpur . . .	2,244	989,782	16,41
Jullundur . . .	1,431	917,587	17,75
Ludhiāna . . .	1,455	673,097	12,42
Ferozepore . . .	4,302	958,072	14,27
Total	19,410	4,306,662	71,58

Of these, Kāngra lies entirely in the hills, sloping away to the submontane District of Hoshiārpur. The rest lie in the plains. The Division contains 6,415 villages and 37 towns, of which the following had in 1901 a population exceeding 20,000 : JULLUNDUR (67,735), FEROZEPORE (49,341), and LUDHIĀNA (48,649). Besides the administrative charge of these British Districts the Commissioner has political control over five Native States, which are shown on the next page, with their area and population.

10 miles in width. Beyond this, the eastern block expands once more like an hour-glass, and embraces the Kulū sub-division, which comprises the *tahsils* of KULŪ and SARĀJ and the mid-Himālayan cantons of LĀHUL and SPITI, each of which merits separate description.

Of the total estimated area of 9,978 square miles, 2,939 are in Kāngra proper. This is the more important part of the District as regards population and cultivation, and comprises two wide and fertile valleys. The Kāngra valley lies between the Dhaola Dhār and the long irregular mass of lower hills which run, almost parallel to the Dhaola Dhār, from north-west to south-south-east. The second valley runs between these hills and the Sola Singhi range, and thus lies parallel to the Kāngra valley. On the north-west the District includes the outlying spurs which form the northern continuation of the Sola Singhi, running down to the banks of the Beās and Chakkī, and it also embraces the western slopes of that range to the south. The Kāngra valley is famous for its beauty, the charm lying not so much in the rich cultivation and perpetual verdure of the valley itself as in the constant yet ever-changing view of the Dhaola Dhār, whose snowy peaks rise sheer above the valley, sometimes to 13,000 feet, and present a different phase of beauty at each turn in the road. The *taluka* of Bangāhal forms the connecting link between Kāngra proper and Kulū, and is divided by the Dhaola Dhār into two parts: to the north Barā or Greater Bangāhal, and to the south Chhotā or Lesser Bangāhal.

Although the general trend of the three main ranges which enclose the valleys of Kāngra proper is from north-west to south-east-by-south, its one great river, the Beās, flows through this part of the District from east to west. Entering the centre of its eastern border at the southern head of the Kāngra valley, it runs past Sujānpur Tīra in a narrow gorge through the central mass of hills, flowing westwards with a southerly trend as far as Nādaun. Thence it turns sharply to the north-west, flowing through the valley past Dera Gopipur; and gradually winding westward, it passes between the northern slopes of the Sola Singhi range and the hills forming its continuation to the north. The remainder of the District is singularly devoid of great streams. The Kāngra valley is drained by several torrents into the Beās, the principal of these flowing in deep gorges through the central hills.

All three facies of the stratified rocks of the Himālayas are Geology. to be found. To the north in Spiti, the Tibetan zone is repre-

sented by a series of beds extending in age from Cambrian to Cretaceous; this is separated from the central zone by the granite range between Spiti and Kulū. The rocks of the central zone consist of slates, conglomerate, and limestone, representing the infra-Blaini and overlying systems of the Simla area. Still farther to the south the third or sub-Himalayan zone consists of shales and sandstones (Sirmūr series) of Lower Tertiary age, and sandstones and conglomerates belonging to the Upper Tertiary Siwālik series. The slate or quartz-micaschist of the central zone is fissile, and of considerable value for roofing purposes; it is quarried at and round Kanhiāra. Gypsum occurs in large quantity in Lower Spiti.¹

Botany.

The main valley is the chief Siwālik tract in the Province, but its flora is unfortunately little known. An important feature is the existence of considerable forests of the *chir* (*Pinus longifolia*), at comparatively low elevations. Kulū (or the upper valley of the Beās) has a rich temperate flora at the higher elevations; in the lower valleys and in Outer Sarāj (on the right bank of the Sutlej) the vegetation is largely sub-tropical, with a considerable western element, including *Clematis orientalis*, a wild olive, &c. The flora of British LĀHUL, the Chandra-Bhāga or Chenāb valley, and SERTI, are entirely Tibetan.

Fauna.

The forests of Kāngra District used to abound in game of all descriptions; and of the larger animals, leopards, bears, hyenas, wolves, and various kinds of deer are still fairly common. Tigers visit the District occasionally, but are not indigenous to these hills. The ibex is found in Lāhul, Spiti, Kulū, and Barā Bangāhal; and the musk-deer in Kulū and on the slopes of the Dhaola Dhār. The wild hog is common in many forests in the lower ranges. Of smaller quadrupeds, the badger, porcupine, pangolin, and otter are commonly found. Different species of wild cat, the flying squirrel, hare, and marmot abound in the hills. The bird-life of both hill and plain is richly represented; and though game is not very abundant, many species are found. These include several varieties of pheasant, among them the *monāl* and argus, the white-crested pheasant, and the red jungle-fowl which is common in the lower valleys. Of partridges many species are

¹ Medlicott, 'The Sub-Himalayan Ranges between the Ganges and Rāvi,' *Memoirs, Geological Survey of India*, vol. iii, part ii; Stoliczka, 'Sections across the North-West Himalayas,' *Memoirs, Geological Survey of India*, vol. v, part i; Hayden, 'Geology of Spiti,' *Memoirs, Geological Survey of India*, vol. xxxvi, part i.

found, from the common grey partridge of the plains to the snow partridge of the Upper Himālayas. Quail and snipe sometimes visit the District in considerable numbers. Ducks, geese, and other water-birds are seen upon the Beās at the beginning and end of summer. Fishing is not carried on to any great extent. Thirty-six fisheries are leased to contractors, mostly on the Beās, only a few being in the lower parts of the hill torrents.

The mean temperature at Kāngra town is returned as 53° in winter, 70° in spring, 80° in summer, and 68° in autumn. The temperature of the southern portion of Kāngra proper is much higher than this, while that of the inhabited parts of the Dhaola Dhār is about 8° lower. Endemic diseases include fever and goitre. The widespread cultivation of rice, by which the whole Kāngra valley is converted into a swamp, has a very prejudicial effect upon health.

Climate
and tem-
perature.

The rainfall varies remarkably in different parts. The average annual fall exceeds 70 inches; along the side of the Dhaola Dhār it amounts to over 100; while 10 miles off it falls to about 70, and in the southern parts to about 50. Barā Bangāhal, which is on the north side of the Dhaola Dhār, has a climate of its own. The clouds exhaust themselves on the south side of the great range; and two or three weeks of mist and drizzle represent the monsoon. The rainfall in Kulā is similarly much less than that of Kāngra proper, averaging from 30 to 40 inches, while Lāhul and Spiti are almost rainless.

Rainfall.

A disastrous earthquake occurred on April 4, 1905. About 20,000 human beings perished, the loss of life being heaviest in the Kāngra and Pālampur *tahsils*. The station of Dharm-sāla and the town of Kāngra were destroyed. The fort and temples at Kāngra received irreparable damage, and many other buildings of archaeological interest were more or less injured.

The earth-
quake of
1905.

The hills of Kāngra proper have formed for many centuries the dominions of numerous petty princes, all of whom traced their descent to the ancient Katoch (Rājput) kings of Jullundur. According to the mythical chronology of the Mahābhārata, their dynasty first established itself in the country between the Sutlej and the Beās 1,500 years before the Christian era. In the seventh century A.D., Hiuen Tsiang, the Chinese Buddhist pilgrim, found the Jullundur monarchy still undivided. At some later period, perhaps that of the Muhammadan invasion, the Katoch princes were driven into the hills, where Kāngra already existed as one of their chief fortresses; and their restricted dominions appear afterwards to have fallen

History.

asunder into several minor principalities. Of these, Nūrpur, Siba, Goler, Bangāhal, and Kāngra are included in Kāngra proper. In spite of constant invasions, the little Hindu kingdoms, secure within their Himālayan glens, long held out against the aggressive Muhammadan power. In 1009 the riches of the Nagarkot temple attracted the attention of Mahmūd of Ghazni, who defeated the Hindu princes at Peshāwar, seized the fort of Kāngra, and plundered the shrine of an immense booty in gold, silver, and jewels. But thirty-five years later the mountaineers rose against the Muhammadan garrison, besieged and retook the fort, with the assistance of the Rājā of Delhi, and set up a facsimile of the image which Mahmūd had carried away. From this time Kāngra does not reappear in general history till 1360, when the emperor Fīroz Tughlak again led a force against it. The Rājā gave in his submission, and was permitted to retain his dominions; but the Muhammadans once more plundered the temple, and dispatched the famous image to Mecca, where it was cast upon the high road to be trodden under the feet of the faithful.

Two hundred years later, in 1556, Akbar commanded in person an expedition into the hills, and succeeded in permanently occupying the fort of Kāngra. The fruitful valley became an imperial demesne, and only the barren hills remained in the possession of the native chiefs. In the graphic language of Akbar's famous minister, Todar Mal, 'he cut off the meat and left the bones.' Yet the remoteness of the imperial capital and the natural strength of the mountain fastnesses encouraged the Rājput princes to rebel; and it was not until after the imperial forces had been twice repulsed that the fort of Kāngra was starved into surrender to an army commanded by prince Khurram in person (1620). On the last occasion twenty-two chieftains promised obedience and tribute, and agreed to send hostages to Agra. At one time Jahāngīr intended to build a summer residence in the valley, and the site of the proposed palace is still pointed out in the lands of the village of Gargari. Probably the superior attractions of Kashmīr, which the emperor shortly afterwards visited, led to the abandonment of his design. At the accession of Shāh Jahān the hill Rājās had quietly settled down into the position of tributaries, and the commands of the emperor were received and executed with ready obedience. Letters patent (*sanads*) are still extant, issued between the reigns of Akbar and Aurangzeb, appointing individuals to various judicial and revenue offices, such as that of *kāsi*, *kānungo*, or *chaudhri*. In

some instances the present representatives of the family continue to enjoy privileges and powers conferred on their ancestors by the Mughal emperors, the honorary appellation being retained even where the duties have become obsolete.

During the period of Muhammadan ascendancy the hill princes appear on the whole to have been treated liberally. They still enjoyed a considerable share of power, and ruled unmolested over the extensive tracts which yet remained to them. They built forts, waged war upon each other, and wielded the functions of petty sovereigns. On the demise of a chief, his successor paid the fees of investiture, and received a confirmation of his title, with an honorary dress from Agra or Delhi. The loyalty of the hill Rājās appears to have won the favour and confidence of their conquerors, and they were frequently deputed on hazardous expeditions, and appointed to places of high trust in the service of the empire. Thus in the time of Shāh Jahān (1646), Jagat Chand, Rājā of Nūrpur, at the head of 14,000 Rājputs, raised in his own country, conducted a most difficult but successful enterprise against the Uzbeks of Balkh and Badakhshān. Again, in the early part of the reign of Aurangzeb (1661), Rājā Māndhātā, grandson of Jagat Chand, was deputed to the charge of Bāmīān and Ghorband on the western frontier of the Mughal empire, eight days' journey beyond the city of Kābul. Twenty years later he was a second time appointed to this honourable post, and created a *mansabdār* of 2,000 horse. In later days (1758), Rājā Ghamand Chand of Kāngra was appointed governor of the Jullundur Doāb and the hill country between the Sutlej and Rāvi.

In 1752 the Katoch principalities nominally formed part of the territories ceded to Ahmad Shāh Durrāni by the declining Delhi court. But the native chieftains, emboldened by the prevailing anarchy, resumed their practical independence, and left little to the Durrāni monarch or the deputy who still held the isolated fort of Kāngra for the Mughal empire. In 1774 the Sikh chieftain, Jai Singh, obtained the fort by stratagem, but relinquished it in 1785 to Sansār Chand, the legitimate Rājput prince of Kāngra, to whom the State was thus restored about two centuries after its occupation by Akbar. This prince, by his vigorous measures, made himself supreme throughout the whole Katoch country, and levied tribute from his fellow chieftains in all the neighbouring States. Every year, on fixed occasions, these princes were obliged to attend his court, and to accompany him with their contingents

wherever he undertook a military expedition. For twenty years he reigned supreme throughout these hills, and raised his name to a height of renown never attained by any ancestor of his race. He found himself unable, however, to cope with the Sikhs, and two descents upon the Sikh possessions in the plains, in 1803 and 1804, were repelled by Ranjit Singh. In 1805 Sansār Chand attacked the hill State of Bilāspur (Kahlūr), which called in the dangerous aid of the Gurkhas, already masters of the wide tract between the Gogra and the Sutlej. The Gurkhas responded by crossing the latter river and attacking the Katochs at Mahal Mori, in May, 1806. The invaders gained a complete victory, overran a large part of the hill country of Kāngra, and kept up a constant warfare with the Rajput chieftains who still retained the remainder. The people fled as refugees to the plains, while the minor princes aggravated the general disorder by acts of anarchy on their own account. The horrors of the Gurkha invasion still burn in the memories of the people. The country ran with blood, not a blade of cultivation was to be seen, and grass grew and tigers whelped in the streets of the deserted towns. At length, after three years of anarchy, Sansār Chand determined to invoke the assistance of the Sikhs. Ranjit Singh, always ready to seize upon every opportunity for aggression, entered Kāngra and gave battle to the Gurkhas in August, 1809. After a long and furious contest, the Mahārājā was successful, and the Gurkhas abandoned their conquests beyond the Sutlej. Ranjit Singh at first guaranteed to Sansār Chand the possession of all his dominions except the fort of Kāngra and 66 villages, allotted for the support of the garrison; but he gradually made encroachments upon all the hill chieftains. Sansār Chand died in 1824, an obsequious tributary of Lahore. His son, Anrudh Chand, succeeded him, but after a reign of four years abandoned his throne, and retired to Hardwār, rather than submit to a demand from Ranjit Singh for the hand of his sister in marriage to a son of the Sikh minister Dhīān Singh. Immediately after Anrudh's flight in 1828, Ranjit Singh attached the whole of his territory, and the last portion of the once powerful Kāngra State came finally into the possession of the Sikhs.

Kāngra passed to the British at the end of the first Sikh War in 1846, but the commandant of the fort held out for some time on his own account. When the Multān insurrection broke out in April, 1848, emissaries from the plains incited the hill chieftains to revolt; and at the end of August in the

boulders in which it was buried. The other, which shows traces of Buddhist workmanship, and dates from the eleventh century, is decorated with carvings of great beauty. The fort and temples of Kāngra town received irreparable damage in the earthquake of 1905.

The
people.

The population of the District at the last four enumerations was: (1868) 743,882, (1881) 730,845, (1891) 763,030, and (1901) 768,124, dwelling in 3 towns and 715 villages. It is divided into the seven *tahsils* of KĀNGRA, NŪRPUR, HAMĪRPUR, DERA GOPIPUR, PĀLAMPUR, KULŪ, and SARĀJ; of which the first five are in Kāngra proper, the two last forming the Kulū subdivision. The head-quarters of these are at the places from which each is named, except in the case of Kulū and Sarāj, whose head-quarters are at Sultānpur and Banjār respectively. The towns are the municipalities of DHARMSĀLA, the head-quarters of the District, KĀNGRA, and NŪRPUR.

The following table shows the chief statistics of population in 1901:—

<i>Tahsil.</i>	Area in square miles.	Number of		Population.	Population per square mile.	Percentage of variation in population between 1891 and 1901.	Number of persons able to read and write.
		Towns.	Villages.				
Kāngra	429	2	134	126,335	294.5	+ 1.0	7,242
Pālampur	443	...	113	132,955	300.1	+ 2.6	7,477
Kulū and Sarāj	1,342	...	68	119,585	89.1	+ 3.8	3,183
Hamīrpur	601	...	64	161,424	268.6	- 0.8	6,077
Dera Gopipur	516	...	145	125,536	243.3	...	6,397
Nūrpur	525	1	191	102,289	194.8	- 2.6	4,241
District total	9,978	3	715*	768,124	76.9	+ 0.6	34,617

NOTE.—The figures for the areas of *tahsils* are taken from revenue returns. The total District area is that given in the *Census Report*.
* These figures are taken from the *Census Report* of 1901, but the correct number of villages is now 714, the number for the Kulū and Sarāj *tahsils* being 67.

In Kāngra proper Hindus number 608,252, or 94 per cent. of the total; Muhammadans, 38,685, or 6 per cent.; and Sikhs, 1,199. Owing to the vast tracts of uncultivable hill-side, the density of the population is only 77 persons per square mile, varying from 300 in the Pālampur *tahsil* to 65.4 in Kulū; but if the cultivated area alone be considered, the density is 834, almost the highest in the Province. The people speak a great variety of dialects of the group of languages classed together as Pahārī, or the language of the hills.

The distinguishing feature in the population is the enormous preponderance of the Hindu over the Muhammadan element, the latter being represented only by isolated colonies of immi-

Castes and
occupa-
tions.

grants, while the mass of the people has preserved its ancient faith in a manner wholly unknown in the plains. This circumstance lends a peculiar interest to the study of the Hindu tribes—their castes, divisions, and customs.

The Brāhmans (109,000) number nearly one-seventh of the total population. Almost without exception, they profess themselves to belong to the great Sāraswat family, but recognize an infinity of internal subdivisions. The first distinction to be drawn is that between Brāhmans who follow, and Brāhmans who abstain from, agriculture. Those who have restricted themselves to the legitimate pursuits of the caste are considered to be pure Brāhmans; while others are no longer held in the same reverence by the people at large.

The Rājputs number even more than the Brāhmans, 154,000 people returning this honourable name. The Katoch Rājās boast the bluest blood in India, and their prejudices and caste restrictions are those of a thousand years ago. The Katoch clan is a small one, numbering only 4,000. The Rāthis (51,000) constitute the higher of the two great agricultural classes of the valley, and are found chiefly in the Nūrpur and Hamīrpur *tahsils*. The other is the Ghirths (120,000), who are Sūdras by status. In all level and irrigated tracts, wherever the soil is fertile and produce exuberant, the Ghirths abound; while in the poorer uplands, where the crops are scanty and the soil demands severe labour to compensate the husbandman, the Rāthis predominate. It is as rare to find a Rāthi in the valleys as to meet a Ghirth in the more secluded hills. Each class holds possession of its peculiar domain, and the different habits and associations created by the different localities have impressed upon each caste a peculiar physiognomy and character. The Rāthis generally are a robust and handsome race: their features are regular and well-defined; their colour usually fair, and their limbs athletic, as if exercised and invigorated by the stubborn soil upon which their lot is thrown. On the other hand, the Ghirth is dark and coarse-featured; his body is stunted and sickly, and goitre is fearfully prevalent among his race. The Rāthis are attentive and careful agriculturists; their women take little or no part in the labours of the field. The Ghirths predominate in the valleys of Pālam, Kāngra, and Rihlu. They are found again in the Hal Dūn or Harīpur valley, and are scattered elsewhere in every part of the District, generally possessing the richest lands and the most open spots in the hills. They are a most indefatigable and hard-working race.

reddish clay of small fertility, containing a quality of loose water-worn pebbles; there are few trees in this soil, and its products are limited to gram and the poorer kinds of pulse, while in the first two descriptions the hill-sides are well forested and every kind of crop can be grown. The cultivated area is divided into fields generally unenclosed, but in some parts surrounded by hedges or stone walls. In the Kāngra valley, where rice cultivation prevails, the fields descend in successive terraces levelled and embanked, and where the slope of the land is rapid they are often no bigger than a billiard table; in the west of the Dera and Nūrpur *tahsils*, where the country is less broken, the fields are larger in size, and the broad sloping fields, red soil, and thick green hedges are charmingly suggestive of a Devonshire landscape. In many parts, and notably in the Kāngra valley, wide areas bear a double harvest.

In Kulū proper the elevation is the chief factor in determining the nature of the crops sown, a few villages lying as low as 3,000 feet and some as high as 9,000. In both Kāngra and Kulū proper the sowing time varies with the elevation, the spring crop being sown from September to December and the autumn crop from April to July. The whole of Lāhul and Spiti is covered with snow from December to the end of April, and sowings begin as soon as the land is clear. For the District as a whole the autumn crop is the most important, occupying 53 per cent. of the area cropped in 1903-4.

The land is held, not as in the plains by more or less organized village communities, but by individual holders whose rights originated in a grant by a Rājā of a right of tenancy in the royal domains. In Kulū only forest and cultivable and cultivated lands have been measured, amounting to 1,342 square miles. Chief agricultural statistics and principal crops.

The area for which details are available from the revenue records of 1903-4 is 3,857 square miles, as shown below:—

<i>Tahsil.</i>	Total.	Cultivated.	Irrigated.	Cultivable waste.	Forest.*
Kāngra . .	429	102	53	37	264
Pālampur . .	443	125	62	52	239
Kulū . .	1,054	67	14	12	963
Sarāj . .	289	58	2	12	206
Hamīrpur . .	602	234	5	101	305
Dera Gopīpur . .	515	167	26	121	136
Nūrpur . .	525	170	22	72	208
Total	3,857	923	184	407	2,221

* The revenue returns include only a portion of the forest area.

Wheat is the chief crop of the spring harvest, covering 342 square miles; barley covered 97 square miles, and gram only 42. Maize and rice are the mainstay of the autumn harvest, covering 223 and 164 square miles respectively. Pulses covered 100 square miles. Of the millets, *mandal*, Italian millet, and *china* are the most important. There were 6,039 acres under cotton. The tea industry is an important one in Kāngra, and 15 square miles were under tea. There are thirty-four gardens owned by Europeans, and the total output is estimated at over a million pounds of tea annually¹. Potatoes, introduced shortly after annexation, are now largely cultivated in the higher hills; and the fields round the Gaddi peasants' houses, which formerly produced maize, wheat, or barley hardly sufficient to feed the families which owned them, now yield a very lucrative harvest of potatoes. In Kulū proper poppy is an important crop, covering 2,102 acres. The climate of Kulū is eminently suited for the production of all kinds of European fruits and vegetables, and several European planters do a large trade in pears and apples. In Lāhul barley, wheat, peas, and buckwheat are the principal crops, and in Spiti barley.

Improvements in agricultural practice.

The chief improvements in agriculture have been the introduction of tea and the potato. The cultivated area increased by about 5 per cent. during the ten years ending 1900, owing to the efforts of individuals who have broken up waste land near their holdings; but there is no scope for any considerable increase. Loans from Government are not greatly in demand, the total amount advanced under the Agriculturists' Loans Act during the five years ending 1903-4 amounting to only Rs. 208.

Cattle, ponies, and sheep.

The indigenous breed of cattle is small but strong, and attempts to improve it by the importation of bulls from Hissār have not been satisfactory, the latter being quite unsuited to the climate, and unfitted to mate with the small hill cows. A few bulls of the Dhanni breed have recently been imported from Jhelum District, and it is hoped that they will prove more suitable. The Gūjars are the only people who make a trade of selling milk and *gāh*, and who keep herds of buffaloes; of these some have a fixed abode in the District and pasture their cattle in the adjoining waste, while others move with their herds, spending the summer on the high ranges, and the winter in the woody parts of the low hills. Buffalo

¹ This was written before the earthquake of 1905, which had disastrous effects on the tea industry.

herds are not allowed to move into the Kulū subdivision. The cattle of Lāhul are a cross between the Tibetan yak and the Himālayan breed of cattle. Sheep and goats form in Kāngra proper the chief support of the pastoral tribe of the Gaddis, who move with their flocks, wintering in the forests in the low hills, retreating in the spring before the heat up the sides of the snowy range, and crossing and getting behind it to avoid the heavy rains in the summer. Large flocks are also kept in the Kulū and Sarāj *tahsils*. There are few ponies in the District and not many mules; the ponies of Kāngra and Kulū proper are poor, but those of Lāhul and Spiti are known for their hardiness and sureness of foot. One pony stallion is maintained by the District board.

Of the total area cultivated in 1903-4, 184 square miles, Irrigation. or nearly 20 per cent., were classed as irrigated. Irrigation is effected entirely by means of channels from the hill streams which lead the water along the hill-sides, often by tortuous channels constructed and maintained with considerable difficulty, and distribute it over the fields. One of these cuts, from the Gaj stream, attains almost the dimensions of a canal, and the channels from the Beās are also important. Most of these works were engineered by the people themselves, and supply only the fields of the villages by which they were constructed; but a few, for the most part constructed by the Rājās, water wider areas, and an organized staff for their maintenance is kept up by the people without any assistance from Government. In Lāhul and Spiti cultivation is impossible without irrigation, and glacier streams are the chief source.

The forests are of great importance, comprising little short Forests. of a quarter of the uncultivated area. Under the Forest department are 87 square miles of 'reserved,' 2,809 of protected, and 296 of unclassified forests, divided into the two Forest divisions of Kāngra and Kulū, each under a Deputy-Conservator. About 4 square miles of unclassified forests are under the Deputy-Commissioner. Several varieties of bamboo cover the lower hills, the bamboo forests occupying an area of 14,000 acres. The produce exported from the Government forests in Kāngra proper is mainly *chil* (*Pinus longifolia*) and bamboo, while *deodār* is the chief product of Kulū. In 1903-4 the forest revenue was 2·8 lakhs.

Valuable metal ores are known to exist both in Kāngra Minerals. proper and in Kulū; but, owing chiefly to the want of means of carriage, of fuel, and of labour, they are practically unworked. Iron was smelted for some years in the Kāngra

hills, and in 1882 there were eight mines yielding 90 maunds of iron a year; but working ceased entirely in 1897. Ores of lead, copper, and antimony have been found, and in Kulū silver and crystal, while gold in small quantities is sometimes washed from the sands of the Beās and Pārbati; coal, or rather lignite, is also produced, but in insignificant quantities. A lease of the old Shigri mines in Lāhul has recently been granted for the purpose of working stibnite and galena. With this exception, the only minerals at present worked are slates and sandstone for building; the Kāngra Valley Slate Company sells 700,000 slates annually, and three other quarries produce together about 83,000, the total value exceeding Rs. 50,000. Several hot mineral springs near Jawāla Mukhī are impregnated with iodide of potassium and common salt. Hot springs occur at several places in Kulū, the most important being at Manikarn in the Pārbati valley, and at Bashist near the source of the Beās.

Arts and
manufac-
tures.

The District possesses no factories except for the manufacture of tea, and there are but few hand industries. The cotton woven in the villages holds its own against the competition of European stuffs, but the industry is seriously handicapped by the small quantity of cotton grown locally. Nūrpur used to be a seat of the manufacture of *pashmina* shawls, but the industry has long been declining; silver ornaments and tinsel printed cloths are made at Kāngra. Baskets are made in the villages of Kāngra proper and Kulū, and blankets in Kulū, Lāhul, and Spiti.

Commerce
and trade.

The principal exports to the plains consist of rice, tea, potatoes, spices, opium, blankets, *pashmina*, wool, *ghī*, honey, and beeswax, in return for which are imported wheat, maize, gram and other pulses, cotton, tobacco, kerosene oil, and piece-goods. The chief centres of the Kāngra trade in the plains are Hoshiārpur, Jullundur, Amritsar, and Pathānkot. There is a considerable foreign trade with Ladākh and Yārkand through Sultānpur in Kulū, the exports being cotton piece-goods, indigo, skins, opium, metals, manufactured silk, sugar, and tea, and the imports ponies, borax, *charas*, raw silk, and wool. The principal centres of internal trade are KĀNGRA, Pālampur, SUJĀNPUR TIRA, JAWĀLA MUKHĪ, and NŪRPUR.

Roads.

No railway traverses the District, though one from Pathānkot to Pālampur was contemplated. The principal roads are the Kāngra valley cart-road, which connects Pālampur and Pathānkot, with a branch to Dharmśāla, and the road from Dharmśāla, via Kāngra, to Hoshiārpur and Jullundur. The

Munsif sits at Kāngra, while there are seven honorary magistrates, including the Rājās of Lambāgraon, Nādaun, and Kutlehr in Kāngra proper. The District is remarkably free from serious crime. Civil suits are chiefly brought to settle questions of inheritance involving the rights *inter se* of widows, daughters, and distant agnatic relatives.

Land
revenue
adminis-
tration.

The revenue history and conditions differ radically from those of the Punjab proper. The hill states, now combined into Kāngra District, were merely a number of independent manors. Each Rājā enjoyed full proprietary rights, and was a landlord in the ordinary sense of the word, leasing his land at will to individual tenants on separate *pattas* or leases. This fact explains the two prominent characteristics of the revenue system, its variety and its continuity. Just as, on the one hand, the intimate local knowledge of the Rājā and his agent enabled them to impose a rent fixed or fluctuating, in cash or kind, according to the resources and the needs of each estate, so, on the other hand, the conquerors, Mughal and Sikh, imposed their tribute on the several Rājās, leaving them to devise the source and the method of collection. The Mughals, it is true, reserved certain areas as imperial demesnes, and here they introduced *chaudhris* who were responsible both for the collection of the revenue and for the continued cultivation of the soil. They made no change, however, either in assessments or in methods of collection. The Rājās depended on their land-agents (called variously *kārdār*, *hākim*, *amin*, or *palsara*), and these in turn had under them the *kotiwāls*, who were responsible for eight or ten villages apiece. The village accountant, or *kāyāt*, the keeper of the granary (*kotiāla*), with constables, messengers, and forest watchers, made up the revenue staff. Every form of assessment was to be found, from the division of the actual produce on the threshing-floor to permanent cash assessments.

Ranjit Singh was the first to interfere with the Rājās' system. He appointed a *nāzim*, or governor of the hill territory, who managed not only the revenue, but the whole expenditure also. Under him were *kārdārs*, who either farmed the revenue of their *parganas*, or accepted a nominal salary and made what they could. The ancient system, however, has survived the misrule of the Sikhs. Every field in the valley is clearly defined; and the proportion of its produce payable to Government is so firmly established that, even under the present cash assessments, it forms the basis on which the land revenue is distributed among individual cultivators.

The first act of the British officers was to apply the village system of the plains to the Kāngra valley. The tenants, with their private cultivating rights, became the proprietary body, with joint revenue-paying responsibilities. The waste, formerly regarded as the property of the Rājās, became attached to the village communities as joint common land. The people thus gained the income arising from the common land, which had previously been claimed by the state.

A summary settlement was made in 1846 by John Lawrence, Commissioner of the Jullundur Doāb, and Lieutenant Lake, Assistant Commissioner, based entirely on the Sikh rent-roll with a reduction of 10 per cent. The first regular settlement, made in 1849, reduced the demand on 'dry' land by 12 per cent., maintaining the former assessment on 'wet' land. A revised settlement, made in 1866-71, had for its object the preparation of correct records-of-rights; but the assessment was not revised until 1889-94, when an increase of 19 per cent. was announced. Rates varied from Rs. 1-5-4 to R. 0-14-7. The total demand in 1903-4, including cesses, was about 10.7 lakhs. The average size of a proprietary holding is 2 acres. There are a number of large *jāgīrs* in the District, the chief of which are Lambāgraon, Nādaun, and Dādo Siba in Kāngra proper, and *wasīri* Rūpi in Kulū.

A system of forced labour known as *begār* was in vogue in the Kāngra hills until recently, and dates back from remote antiquity. All classes who cultivate the soil were bound to give, as a condition of the tenure, a portion of their labour for the exigencies of state. Under former dynasties the people were regularly drafted and sent to work out their period of servitude wherever the ruler chose. So inveterate had the practice become that even artisans, and other classes unconnected with the soil, were obliged to devote a portion of their time to the public service. Under the British Government the custom was maintained for the conveyance of travellers' luggage and the supply of grass and wood for their camps, but was practically abolished in Kāngra proper in 1884, and in Kulū in 1896.

The collections of land revenue alone and of total revenue are shown below, in thousands of rupees :—

	1880-1.	1890-1.	1900-1.	1903-4.
Land revenue . . .	6,19	6,57	7,35	7,50
Total revenue . . .	8,76	9,97	10,57	10,55

Local and
municipal.

The District contains three municipalities, DHARMSĀLA, KĀNGRA, and NŪRPUR. Outside these, local affairs are managed by a District board, and by the local boards of Kāngra, Nūrpur, Dera Gopipur, Hamīrpur, and Pālampur, the areas under which correspond with the *tahsils* of the same names. The chief source of their income is the local rate, a cess of Rs. 8-5-4 per cent. on the land revenue in Kāngra, of Rs. 10-6-8 in Kulū, and of Rs. 7-8-10 in the *waziri* of Spiti. The expenditure in 1903-4 was Rs. 1,45,000, public works being the principal item.

Police and
jails.

The District is divided into 15 police stations, 13 in Kāngra proper and 2 in Kulū, and the police force numbers 412 men, with 901 village watchmen. The Superintendent usually has three inspectors under him. The jail at head-quarters contains accommodation for 150 prisoners. It has, however, been condemned as unsafe, and a new one is in contemplation.

Education.

Kāngra stands seventh among the twenty-eight Districts of the Province in respect of the literacy of its population. In 1901 the proportion of literate persons was 4.5 per cent. (8.4 males and 0.3 females). The number of pupils under instruction was 2,591 in 1880-1, 3,881 in 1890-1, 3,341 in 1900-1, and 3,852 in 1903-4. In the last year the District contained 6 secondary and 57 primary (public) schools for boys and 9 for girls, and 3 advanced and 20 elementary (private) schools, with 266 girls in the public and 38 in the private schools. The principal educational institution is the high school at Pālampur, founded in 1868, and maintained by the District board. There are 5 middle schools for boys, of which 2 are Anglo-vernacular; 3 of these are maintained by the District board and 2 are aided. The total expenditure on education in 1903-4 was Rs. 35,000, of which Rs. 7,000 was derived from fees, Rs. 4,000 from Government grants, and Rs. 2,000 from subscriptions and endowments. Municipalities contributed Rs. 4,000, and the balance was paid out of District funds.

Hospitals
and dis-
pensaries.

Besides the civil hospital at Dharmśāla, the District has eight outlying dispensaries. In 1904, 739 in-patients and 101,159 out-patients were treated, and 1,769 operations were performed. The expenditure was Rs. 19,000, of which Rs. 14,000 as met from District and Rs. 3,000 from municipal funds.

Vaccina-
tion.

The number of successful vaccinations in 1903-4 was 40,825, representing the high proportion of 53 per 1,000 of the population. Vaccination is compulsory in Dharmśāla.

Lācha, or pass (16,500 feet), in the north, and, flowing at first in almost opposite directions, unite at Tandi, whence the combined waters of the Chandra-Bhāga or Chenāb flow into Chamba. Between the two rivers, an isolated mass of mountains attains still greater dimensions, consisting of one almost unbroken ice-field, with, at rare intervals, impassable barriers of naked rock. South of the highest peak, 21,415 feet above the sea, a glacier stretches downward for 12 miles; while east and west the hills, though slightly inferior in elevation, still reach the limits of the snow-line, and flank the valley on every side, except along the narrow outlet of the Chenāb. In such a waste of rock and ice, villages can be planted only in a few comparatively favoured spots, among the lower valleys of the Chandra and Bhāga, from Old Koksar on the former to Dārcha on the latter river. The remainder of Lāhul is completely uninhabited, except for a few weeks in summer, when the Kāngra shepherds bring up their flocks for pasturage. Picturesque knots of houses, however, nestle here and there in sheltered nooks, amid green irrigated fields made beautiful by the exquisite Himālayan flora. The summer is almost rainless, but there is heavy snowfall in winter, the whole country being covered from December to April. The mean temperature at Kardang in the valley of the Bhāga is 29° in December and 59° in June. The inhabitants of the valleys of the Chandra and Bhāga are Buddhists, and of that of the united Chandra-Bhāga Hindus. The inhabited portions of the Lāhul valley have an estimated elevation of 10,000 feet above sea-level. Kangser, the highest village, stands at a height of 11,345 feet. The principal villages are KYELANG and Kardang on opposite sides of the Bhāga, on the trade route between the Rohtang pass from Kulū and the Bārā Lācha leading into Ladākh.

The Lāhul valley is mentioned as early as the seventh century in the itinerary of Hiuen Tsiang, the Chinese Buddhist pilgrim, who notices it under the name of Lo-hu-lo, as a district lying north-east of Kulū. In the earliest times, it probably formed a dependency of the Tibetan kingdom; and on the disruption of that kingdom in the tenth century, it seems to have been included in the principality of Ladākh. We have no information to show the period at which it became independent, though reasons have been adduced for believing that that event preceded the reorganization of Ladākh about 1580. An epoch of native rule under petty chiefs (Thākurs) ensued, during which the various local families appear to have paid tribute to Chamba. Four or five of these families have sur-

Spiti (Piti).—Himālayan *watiri* or canton of the Kulu subdivision of Kāngra District, Punjab, lying between $31^{\circ} 42'$ and $32^{\circ} 59'$ N. and $77^{\circ} 26'$ and $78^{\circ} 42'$ E., with an area of 2,155 square miles. The population (1901) is only 3,231, or less than 2 persons per square mile. Spiti is completely hemmed in by lofty mountain ranges of an average elevation of 18,000 feet, which divide it from Lāhul on the west, Bashahr on the south, Great Tibet on the east, and Ladākḥ on the north. It includes the upper valley of the Spiti river, which, rising in the Western Himālayas, at about 16,000 feet, flows south-east into Tibet, and thence enters Bashahr at an elevation of 11,000 feet, and ultimately finds its way into the Sutlej; the upper valley of the Pāra river, which also enters Tibet and then falls into the Spiti, their united streams equalling the Sutlej in volume at their junction with that river; the valley of the Isamp, whose waters fall into the Indus; and the eastern half of the Upper Chandra valley. Of these four valleys, only that of the Spiti is inhabited. The most important tributary of the Spiti river is the Pīn, which rises in the angle of the mid-Himālayan and Mānirang ranges, and joins the Spiti after a course of 45 miles, a short distance above Dankar, the principal village of the valley. The mountains of Spiti are yet more lofty than in the neighbouring country of Lāhul. In the Outer Himālayas is one peak of 23,064 feet, and many along the whole line are considerably over 20,000. Of the mid-Himālayas, two peaks exceed 21,000 feet, and in the southern range the Mānirang is 21,646 feet in height. From the main ranges transverse lines of mountains project far into the valley on either side, leaving in many cases only a narrow gorge, through which flows the Spiti river. Even these minor ranges contain peaks the height of which in many instances exceeds 17,000 feet. The mean elevation of the Spiti valley is 12,981 feet above sea-level. Several villages are situated at an elevation of upwards of 13,000 feet, and one or two as high as 14,000 feet. Scarcely any vegetation clothes the bare and rocky mountain slopes; yet the scenery is not devoid of a rugged grandeur, while the deep and peculiar colour of the crags often gives most picturesque effects to the otherwise desolate landscape. Red and yellow predominate in the rocks, contrasting finely with the white snowy peaks in the background and the deep blue sky overhead. The villages stand for the most part on little flat plateaux, above the cliffs of the Spiti river; and their white houses, dotted about among the green cultivated plots, afford rare oases in the desert

of stony débris which covers the mountain sides. There is practically no rainfall, but the snowfall in winter is very severe. The mean temperature of the Upper Spiti valley is 17° in January and 60° in July.

The history of Spiti commences with the first formation of the kingdom of Ladākh, after which event the valley seems for a while to have been separated from that government, and attached to some other short-lived Tibetan principality. About 1630 it fell into the hands of Sinagi Nāmgyal, king of Ladākh, who allotted it to his third son, Tenchbog. Soon afterwards, it became a part of the Guge principality, which lay to the east, in what is now Chinese Tibet; and it did not again come under the dominion of Ladākh till about 1720. In that year the king of Ladākh, at the conclusion of a war with Guge and Lhāsa, married the daughter of the Tibetan commander, and received Spiti as her dower. Thenceforward the valley remained a province of Ladākh; but, from its remote and inaccessible position, it was practically left for the most part to govern itself, the official sent from Leh usually disappearing as soon as the harvest had been gathered in and the scanty revenue collected. Spiti was always liable to be harried by forays; but the people, being an unwarlike race, preferred the payment of blackmail to the armed defence of their barren valley.

After the Sikhs annexed the neighbouring principality of Kulū in 1841, they dispatched a force to plunder Spiti. The inhabitants, in accordance with their usual tactics, retreated into the mountains, and left their houses and monasteries to be plundered and burnt. The Sikhs retired as soon as they had taken everything upon which they could lay hands, and did not attempt to annex the valley to Kulū, or to separate it from Ladākh. In 1846, however, on the cession of the trans-Sutlej States to the British after the first Sikh War, the Government, with the object of securing a road to the wool districts of Chāng Thāng, added Spiti to Kulū, giving other territory in exchange to the Mahārājā of Kashmir. In the same year, Captain (afterwards Sir A.) Cunningham and Mr. Vans Agnew demarcated the boundary between Spiti, Ladākh, and Chinese Tibet. Since that date, the valley has been peacefully governed by the native hereditary ruler or *nano*, supported by the Assistant Commissioner of Kulū. The *nano* is assisted by five elders or *gatpos*, and practically manages all the internal affairs of the canton in accordance with the Spiti Regulation (No. I of 1873). The British codes are not applicable to Spiti, unless specially extended.

The people are Tartars by race and Buddhist by religion, and extensive monasteries often crown the lower ridges overhanging the villages. The principal and richest monastery is at Ki; that of Tangiūt receives members of the *nono's* family; while at Dankhar is a less important monastery. The monks of these three all belong to the celibate Gelukpa sect. At Pin is a smaller monastery, belonging to the Dukhpa sect, which permits marriage, and the descendants of its inmates still practise singing and dancing as allowed by their founder. Talo contains an extensive *lāmāsarai*, built by the gods in a single night. As this was not constructed by Buddhists, it does not rank as a monastery (*gonpa*). It possesses a remarkable collection of nearly life-size idols, and one of Chamba 16 feet high. Unlike the *gonpas*, which are all built on lofty eminences, it stands on a level spot and contains about 300 monks. The monasteries, which are endowed by tithes of grain (*pun*) levied from every field, are extensive buildings, standing apart from the villages. In the centre of the pile are the public rooms, consisting of chapels, refectories, and storerooms; round them are clustered the separate cells in which the monks live. Each landholder's family has its particular *tāsha* or cell in the monastery to which it is hereditarily attached; and in this all the monks of the family—uncles, nephews, and brothers—may be found living together. The monks ordinarily mess in these separate quarters, and keep their books, clothes, cooking utensils, and other private property in them. Some mess singly, others two or three together. A boy monk, if he has no uncle to look after him, is made a pupil to some old monk, and lives in his cell; there are generally two or three chapels—one for winter, another for summer, and a third perhaps the private chapel of the abbot or head *lāma*.

The monks meet in the chapel to perform the services, which ordinarily consist of readings from the sacred books; a sentence is read out and then repeated by the whole congregation. Narrow carpets are laid lengthways on the floor of the chapel, one for each monk; each has his allotted place, and a special position is assigned to the reader; the abbot sits on a special seat of honour, raised a little above the common level of the floor; the chapels are fine large rooms, open down the centre, which is separated from the sides by rows of wooden pillars. At the far end is the altar, consisting of a row of large coloured figures, the images of the *avatār* or incarnation of Buddha of the present age, of the coming *avatār* of the next age, and of the gurūs Rimbochi, Atishā, and other saints. In

some chapels a number of small brass images from China are ranged on shelves on one side of the altar, and on the other stands a bookcase full of the sacred books, which are bundles of loose sheets printed from engraved slabs in the fashion which has been in use in Tibet for many centuries. The walls all round the chapel are painted with figures of male or female divinities, saints, and demons, or hung with pictures on cloth with silk borders; similar pictures on cloth are also suspended across the chapel on ropes. The best pictures are brought from Great Tibet as presents to the monastery by monks who return from taking the degree of *gelang* at Lhāsa, or who have been living for some years in one of the monasteries of that country. They are painted in a very quaint and conventional style, but with considerable power of drawing and colouring. Huge cylindrical prayer-wheels, which spin round at a slight touch of the finger, stand round the room, or on each side of the altar. In the storerooms among the public property are kept the dresses, weapons, and fantastic masks used in the *chām* or religious plays; also the drums and cymbals, and the robes and quaint head-dresses worn by the superior monks at high ceremonies.

The refectory or public kitchen is only used on the occasion of certain festivals, which sometimes last several days, during which special services are performed in the chapels. While these festivals last, the monks mess together, eating and drinking their fill of meat, barley, butter, and tea. The main source from which the expense of these feasts is met is the *pun*, which is not divided among the monks for everyday consumption in the separate cells. To supply his private larder, each monk has, in the first place, all he gets from his family in the shape of the produce of the '*lāma's* field' or otherwise; secondly, he has his share, according to his rank in the monastery, of the *bula* or funeral offerings and of the harvest alms; thirdly, anything he can acquire in the way of fees for attendance at marriages or other ceremonies or in the way of wages for work done in the summer. The funeral offerings made to the monasteries on the death of any member of a household consist of money, clothes, pots and pans, grain, butter, &c.; the harvest alms consist of grain collected by parties of five or six monks sent out on begging expeditions all over Spiti by each monastery just after the harvest. They go round from house to house in full dress, and standing in a row, chant certain verses, the burden of which is—'We are men who have given up the world, give us, in charity, the

at the crest of the Rohtang pass, 13,326 feet above the sea, and after a course of 60 miles enters Mandī State at an elevation of 3,000 feet; its chief tributaries are the Pārbatī, Sainj, and Tirthan, whose valleys comprise the greater part of the eastern half of the tract. The Beās is bridged by the Duff Dunbar steel-rope suspension bridge at Shamsi, by another suspension bridge between Larji and Bujaura, and by wooden cantilever bridges (*sānghas*) at five other places. Its course presents a succession of magnificent scenery, including cataracts, gorges, precipitous cliffs, and mountains clad with forests of pine, towering above the tiers of *deodār* on the lower rocky ledges. Of the total area of Kulū proper, the cultivated portion amounts to only 60 square miles, and the rest is forest and desolate mountain waste above the limit of tree growth. The highest villages are not more than 9,000 feet above the sea, and the average elevation of the cultivated and inhabited parts is about 5,000 feet. The annual rainfall varies from 31 to 42 inches; in winter the ground is covered with snow for days or months together according to its situation, though snow does not usually lie long at heights of less than 6,000 feet; 55 feet of snow have been measured on the Sirikand pass (15,000 feet), but the Dulchī pass, over which lies the main road to Kāngra, is generally open all the year round.

The little principality of Kulū formed one of the eleven original Rājput States between the Rāvi and the Sutlej, and probably belonged to some of the minor Katoch dynasties, offshoots from the great kingdom of JULLUNDUR. Hiuen Tsiang, the Chinese Buddhist pilgrim, visited it in the seventh century; and local legends preserve the names of eighty-seven princes who ruled successively in this remote mountain valley. Authentic history, however, first recognizes Kulū in the fifteenth century, when Rājā Sudh Singh, whom tradition places seventy-fourth in descent from the original founder of the dynasty, ascended the throne. His descendants ruled the valley till the beginning of the nineteenth century, their annals being wholly confined to the usual Indian record of court intrigues, assassinations, and dynastic quarrels. When the Gurkhas broke out from their home in Nepāl, and conquered all the country up to the banks of the Sutlej, they found Bikramā Singh upon the throne of Kulū. Like the other neighbouring chieftains, Bikramā Singh paid tribute to the invaders for his cis-Sutlej territory, as well as to Sansār Chand, the Katoch prince of KĀNGRA, for Kulū itself. In 1809, however, Ranjit Singh, called in by Sansār Chand, made

himself master of the hills, and levied tribute from the young Rājā of Kulū, Ajit Singh, an illegitimate son of Bikramā Singh. Three years later, the Sikhs demanded an annual payment of Rs. 50,000; and on the Rājā's refusal, marched upon his capital of Sultānpur and sacked his palace. Ajit Singh at length bribed the Sikhs to withdraw, by paying them all the money he could collect. After the expulsion of the Gurkhas, the Rājā became a feudatory of the British for the cis-Sutlej tract. In 1840 General Ventura led a Sikh force against the neighbouring State of Mandī; after conquering which, one of his lieutenants attacked Kulū, on the pretext of hostile dispositions. The Rājā made no resistance, and allowed himself to be taken prisoner; but the brutal discourtesy shown him by his captors roused the hereditary loyalty of the hillmen. A secret muster took place; and as the invaders marched out of Sarāj by the Basleo pass, the hillmen fell upon them in a narrow ravine, rescued their prince, and massacred the Sikhs almost to a man. Ajit Singh retired across the Sutlej to his fief of Shāngri, which he had held from the British Government since the expulsion of the Gurkhas, and so placed himself beyond reach of vengeance from Lahore. A Sikh army soon after marched into Sarāj, but found it completely deserted, the inhabitants having fled into the inaccessible forests on the mountain-sides. Accordingly they handed over the country in farm to the Rājā of Mandī, leaving a garrison in Kulū to enforce their supremacy. Ajit Singh died at Shāngri in 1841; and the Sikhs made over *wasīrī* Rūpi to his first cousin, Thākur Singh, while Shāngri remained in the hands of another relative. In 1846, at the close of the first Sikh War, the Jullundur Doāb, with the adjoining Hill States, passed into the power of the British; and Kulū, with Lāhul and Spiti, became a *tahsil* of the new Kāngra District. Government confirmed Thākur Singh in his title of Rājā, and gave him sovereign powers within *wasīrī* Rūpi. On his death in 1852, his son, Gyān Singh, of doubtful legitimacy, obtained the inferior title of Rai, with half the land and no political powers. The resumed half has since been restored, with certain reservations in favour of Government. In 1892 the present Rai, Megh Singh, succeeded to the *jāgīr* of Rūpi, with some modifications. The Rai is an honorary magistrate and Munsif in his *jāgīr*.

Sarāj Tahsil.—*Tahsil* in the Kulū subdivision of Kāngra District, Punjab, lying between 31° 21' and 31° 50' N. and 77° 17' and 77° 47' E., with an area of 289 square miles. It

is bounded on the north-east by Spiti, on the east and south by Bashahr and the Simla Hill States, and on the west by Suket and Mandi. The population in 1901 was 50,631, compared with 50,551 in 1891. It contains 25 villages, including Banjār, the head-quarters. The *tahsil* is divided into the two *waziris* or cantons of Inner and Outer Sarāj, separated from each other by the Jalori ridge, which has an average elevation of 12,000 feet. Inner Sarāj lies in the Beās basin, and in physical aspects resembles the KULŪ *tahsil*. Outer Sarāj belongs to the Sutlej valley, and the country slopes down from the Jalori ridge to the river, which is here only 3,000 feet above the sea. The land revenue and cesses amounted in 1903-4 to Rs. 46,000.

Hamīrpur Tahsil.—*Tahsil* of Kangra District, Punjab, lying between $31^{\circ} 25'$ and $31^{\circ} 58'$ N. and $76^{\circ} 9'$ and $76^{\circ} 44'$ E., with an area of 602 square miles. It is bounded on the south by Bilāspur State and on the east by Mandi State, and lies between the Beās on the north and the Sutlej on the south. The north-east corner is rugged and inaccessible, and the Sola Singhi range runs along the south-west border. Broken masses of hills cover almost all the *tahsil*, but in some parts there are stretches of fairly level ground. The population in 1901 was 161,424, compared with 162,705 in 1891. It contains 64 villages, including Hamīrpur, the head-quarters, and SUJĀNPUR TIRA. The land revenue and cesses amounted in 1903-4 to 1.9 lakhs.

Dera Gopipur.—*Tahsil* of Kangra District, Punjab, lying between $31^{\circ} 40'$ and $32^{\circ} 13'$ N. and $75^{\circ} 55'$ and $76^{\circ} 32'$ E., with an area of 515 square miles. It extends from the high ridge on the north-east, which separates it from the Kangra *tahsil*, across the valley of the Beās, to the Jaswān range on the south-west, which separates it from Hoshiārpur. The rich plain which lies between the Gaj and the Buner. The population in 1901 was 125,536, compared with 125,512 in 1891. It contains 145 villages, including Dera Gopipur, the head-quarters, HARĪPUR, and JAWĀLA MUKHI. The land revenue and cesses amounted in 1903-4 to 2 lakhs.

Nūrpur Tahsil.—*Tahsil* of Kangra District, Punjab, lying between $31^{\circ} 58'$ and $32^{\circ} 24'$ N. and $75^{\circ} 37'$ and $76^{\circ} 9'$ E., with an area of 525 square miles. It consists of a confused mass of hills, mostly forest-clad, and is bounded on the north-east by the Dhaola Dhār range which divides it from Chamba. The population in 1901 was 102,289, compared with 104,895

Singh and his son Jagat Singh played a great part, the fief of Kābul being bestowed on the former in 1585. Under the Sikhs, Rājā Bhūp Singh was at first an ally of Ranjīt Singh against the Katoch kings, but in 1812 his territory was confiscated. On the British annexation, his son, Shamsheer Singh, obtained a *jāgīr* of 20 villages. This grant is now held by his nephew, Rājā Raghunāth Singh, and its revenue amounts to about Rs. 26,000.

Baijnāth (the ancient Kīra-grāma).—Village in Kāngra District, Punjab, situated in $32^{\circ} 2' \text{ N.}$ and $76^{\circ} 43' \text{ E.}$, 11 miles east of Pālampur. Population (1901), 6,555. Two Hindu temples here bear inscriptions in the ancient Sārada character, giving the pedigree of the Rājānakas or princes of Kīragrāma, who were kinsmen and feudatories of the kings of Jalandhara or Trigarta. The date of the inscriptions is disputed. Formerly attributed to the early part of the ninth century, they are assigned by a recent investigator to a period three or four centuries later. One of these temples was seriously damaged by the earthquake of April 4, 1905.

[*Epigraphia Indica*, vol. i, pp. 97-119; *Journal, Royal Asiatic Society*, 1903, p. 16, note.]

Bangāhal.—Canton of the Outer Himālayas, in Kāngra District, Punjab, lying between $32^{\circ} 15' \text{ and } 32^{\circ} 29' \text{ N.}$ and $76^{\circ} 49' \text{ and } 76^{\circ} 55' \text{ E.}$, and separating Kāngra proper from the outlying subdivision of Kulā. The Dhaola Dhār divides the canton into two main valleys, the northern of which is called Barā or Greater Bangāhal, and the southern Chhotā or Lesser Bangāhal. The former, with an area of 290 square miles, contains but a single village, with a few Kanet families, 8,500 feet above sea-level. The Rāvi river has its source in this valley, and is a considerable stream before it issues into the State of Chamba, the mountains rising steeply from its banks into peaks of 17,000 and even 20,000 feet, covered with glaciers and perpetual snow. The lower ravines contain much pine forest, and the upper slopes afford grazing for large flocks. Chhotā Bangāhal is again divided by a range, 10,000 feet in height, into two glens. In the eastern, which contains eighteen scattered hamlets of Kanets and Dāghis, rises the Ul river; and the western, known as Bīr Bangāhal, resembles the higher valleys of Kāngra proper.

Barā Lācha.—Mountain pass in the Lāhul canton of the Kulā subdivision of Kāngra District, Punjab, situated in $32^{\circ} 49' \text{ N.}$ and $77^{\circ} 28' \text{ E.}$, on the Central Asian trade route over the Western Himālayas, from Dārcha in Lāhul to the

Rupshu country in Ladākh. The pass is 16,500 feet above the sea; but though the ascent on both sides is easy, it can be crossed by laden yaks and ponies only during the summer. The Chandra and Bhāga rivers (Chenāb) rise on either side of the pass.

Chari.—Village in Kāngra District, Punjab, situated in $32^{\circ} 8' \text{ N.}$ and $76^{\circ} 27' \text{ E.}$, near Kot Kāngra. Population (1901), 2,597. In 1854 the foundations of a temple with an inscribed pedestal (since lost) were discovered here. The inscription contained the formula of the Buddhist faith; and from the figures of seven boars carved on the front of the pedestal, it appeared that the statue to which it belonged was that of the Tāntric goddess Vajra-varāhi.

[*Archaeological Survey Reports*, vol. v, p. 177.]

Dankhar.—Ancient capital of the Spiti canton, in the Kulū subdivision of Kāngra District, Punjab, situated in $32^{\circ} 5' \text{ N.}$ and $78^{\circ} 15' \text{ E.}$, and still the head-quarters of the *nano* or hereditary governor of SPITI. Population (1901), 713. It is picturesquely placed on a spur 12,700 feet above sea-level, which juts out into the main valley, and ends in a precipitous cliff overtopped by a rude fort, now the property of Government, and flanked by a monastery of Buddhist monks of the Gelukpa order. The inhabitants are pure Tibetans.

Dhaola Dhār.—Mountain chain in Kāngra District, Punjab, formed by a projecting fork of the Outer Himālayan range, marking the boundary between the Kāngra valley and Chamba. The main system here rises steeply from the low lands at its base, unbroken by any minor hills, to an elevation of 13,000 feet above the valley beneath. The chain is formed by a mass of granite, which has forced its way through the superincumbent sedimentary rocks, and crowns the summit with its intrusive pyramidal crests, too precipitous for the snow to find a lodging. Below, the waste of snowfields is succeeded by a belt of pines, giving way to oaks as the flanks are descended, and finally merging into a cultivated vale watered by perennial streams. The highest peak attains an elevation of 15,956 feet above sea-level, while the valley has a general height of about 2,000 feet. Dharmśāla, the head-quarters of Kāngra District, lies on a southern spur of the Dhaola Dhār. The name means the 'white' or rather 'grey range.'

Dharmśāla.—Hill station, the head-quarters of Kāngra District, Punjab, situated in $32^{\circ} 13' \text{ N.}$ and $76^{\circ} 11' \text{ E.}$ Population (1901), 6,971. Dharmśāla lies on a spur of the Dhaola Dhār, 16 miles north-east of Kāngra, in the midst of wild and

perished at Dharmsāla alone, including 25 Europeans and 112 of the Gurkha garrison. It has been decided to retain Dharmsāla as the head-quarters of the District, and new offices will shortly be erected. In the upper station, many of the barracks and officers' houses have already been rebuilt. The garrison consists of two battalions of Gurkhas.

The scenery of Dharmsāla is peculiarly grand. The station occupies a spur of the Dhaola Dhār itself, and is well wooded with oak and other forest trees. Above it the pine-clad mountain-side towers towards the loftier peaks, which, covered for half the year with snow, stand out jagged and scarred against the sky. Below, in perfect contrast, lies the luxuriant Kāngra valley, green with rice-fields and a picture of rural quiet. Much has been done of late years to render Dharmsāla more accessible. Cart-roads connect it with the plains, via Hoshiārpur on the south and via Pathānkot on the west; there is a tonga service from Pathānkot, and a telegraph line connects Dharmsāla and Pālampur with Amritsar and Lahore. The rainfall is very heavy, and the atmosphere is peculiarly damp during the three months of the rainy season. The average fall is 126 inches, by far the highest figure reached at any point of observation in the Province. In January, February, and March also, storms are very frequent. Trade is confined to the supply of necessities for the European residents, officials, and their servants. The Dal fair, held at the Dal Lake, close to the cantonment, in September, is largely attended by the Gaddis and other Hindus. The famous temple of Bhāgsu Nāth is 2 miles to the east of the station. The municipality was created in 1867. The income during the ten years ending 1902-3 averaged Rs. 9,700, and the expenditure Rs. 9,500. In 1903-4 the income and expenditure were Rs. 13,100 and Rs. 11,700 respectively. The chief source of income is taxes on houses and lands and the sale of trees and grass. The income and expenditure of cantonment funds during the ten years ending 1902-3 averaged Rs. 2,900.

Haripur.—Old fort and village in the Dera Gopipur *tahsil* of Kāngra District, Punjab, situated in 32° N. and 76° 10' E., on the banks of the Bāngangā stream, 9 miles south-west of Kāngra fort. Population (1901), 2,243. It was founded in the thirteenth century by Hari Chand, the Katoch Rājā of Kāngra, whose brother had succeeded to the throne of Kāngra on the Rājā's supposed death. Hari Chand had really fallen into a dry well while out hunting; and when he was extricated and heard of his brother's accession, he resigned

his right and founded the town and fort of Haripur opposite Goler, making it the head-quarters of a separate principality. It continued to be the capital of the State until 1813, when it was treacherously seized by Ranjit Singh. A younger branch of the Goler family still lives in the town, but the elder branch resides in the neighbouring village of Nandpur, and Haripur is now of little importance.

Jawāla Mukhi.—Ancient site in the Dera Gopipur *tahsil* of Kāngra District, Punjab, situated in $31^{\circ} 52' N.$ and $76^{\circ} 20' E.$, on the road from Kāngra town to Nādaun, at the foot of a precipitous range of hills, which form the northern limit of the Beās valley. Population (1901), 1,021. Once a considerable and opulent town, as its ruins testify, it is now chiefly famous for the temple of the goddess Jawāla Mukhi, 'she of the flaming mouth,' which lies in the Beās valley and is built over some natural jets of combustible gas, believed to be a manifestation of the goddess Devī. Another legend avers that the flames proceed from the mouth of the demon Jālandhara, the Daitya king whom Siva overwhelmed with mountains, and who gives his name to the Jullundur Doāb. The building is modern, with a gilt dome and pinnacles, and possesses a beautiful folding door of silver plates, presented by the Sikh Rājā, Kharak Singh. The interior of the temple consists of a square pit about 3 feet deep, with a pathway all round. In the middle the rock is slightly hollowed out about the principal fissure, and on applying a light the gas bursts into a flame. The gas escapes at several other points from the crevices of the walls of the pit. It collects very slowly, and the attendant Brāhmans, when pilgrims are numerous, keep up the flames with *ghā*. There is no idol of any kind, the flaming fissure being considered as the fiery mouth of the goddess, whose headless body is said to be in the temple of Bhawan. The income of the temple, which is considerable, belongs to the Bhojki priests. At one time the Katoch Rājās appear to have appropriated the whole or the greater part of the receipts; and under Muhammadan rule a poll-tax of one anna was levied upon all pilgrims. The number of these in the course of the year is very great; and at the principal festival in September–October as many as 50,000 are said to congregate, many coming from great distances. Another festival of scarcely less importance takes place in March. Six hot mineral springs, impregnated with common salt and iodide of potassium, are found in the neighbourhood. A *sarai* erected by the Rājā

of Patiala is attached to the temple, and there are also eight *dharmśālas* or resthouses for travellers. The temple was slightly damaged by the earthquake of April 4, 1905. The municipality was abolished in 1885.

Kāngra Town (*Nagar Kot*¹, *Kot Kāngra*).—Town in Kāngra District, Punjab, formerly the head-quarters of the District and still the head-quarters of the Kāngra *tahsīl*, situated in 30° 5' N. and 76° 16' E. Population (1901), 4,746. Lying on the northern slope of the low ranges which run through the centre of the District, it faces Dharmśāla and commands a fine view of the Kāngra valley. In its lower suburb (called Bhawan) was the temple of Devi Bajreshri, whose gilded cupola was, until the earthquake of 1905, a conspicuous landmark, and which contained a late Sanskrit inscription of about 1430 dedicated to Jawāla Mukhi and mentioning Sansār Chand I, the Katoch king of Kāngra. On the lofty ridge south of and above the town stood Kot Kāngra or 'the fort,' surrounded on three sides by inaccessible cliffs. In its highest part were the dwellings and temples of the old Katoch kings of Kāngra. The town, with the fort and temples, was destroyed by the earthquake of April 4, 1905, in which 1,339 lives were lost in the town. Seven Europeans were among the killed.

Kāngra has from time immemorial been a stronghold of the Katoch Rājās. Firishta, in his introductory chapter narrating the exploits of a former king of Kanauj, who overran the hills from Kumaun to Kashmir, subduing 500 petty chiefs, distinctly alludes to the Rājā of Nagarkot. The riches of the temple attracted the attention of Mahmūd of Ghazni, who in 1009 took the fort and plundered the temple, carrying off, it is said, 700,000 golden *dinārs*, 700 *mans* of gold and silver plate, 200 *mans* of pure gold in ingots, 2,000 *mans* of unwrought silver, and 20 *mans* of jewels, including pearls, corals, diamonds, and rubies. The temple plundered by Mahmūd was probably situated within the fort and was not the temple of Devi in Bhawan, as has been supposed. Thirty-five years later the place is said to have been recaptured after a siege of four months by the Hindu princes under the Rājā of Delhi. Kāngra submitted to Fīroz Shāh in 1360, who again plundered the temple; and in 1388 prince Mahmūd Tughlak, when a fugitive from Delhi, found an asylum here till called to the throne in 1390. Kāngra was permanently garrisoned under the Mughals,

¹ Nagarkot appears to have been the name of the town and Kāngra of the fort.

Bhāga, about 4 miles above its junction with the Chandra, and on the main trade route between the Rohtang and Bārā Lācha passes. Population (1901), 388. A post office is maintained here during the summer months, and the village has for many years been a station of the Moravian Mission, which maintains a school and a dispensary. It also contains the court-house of the Thākur of Lāhul, and an observatory 10,087 feet above sea-level.

Nādaun Town.—Petty town in the Hamirpur *tahsil* of Kāngra District, Punjab, situated in $31^{\circ} 46' \text{ N.}$ and $79^{\circ} 19' \text{ E.}$, on the left bank of the Beās, 20 miles south-east of Kāngra town, and head-quarters of the *jūgīr* of Rājā Amar Chand, son of the late Rājā Sir Jodhbīr Chand. Population (1901), 1,426. It was once a favourite residence of Rājā Sansār Chand, who built himself a palace at Amtar, on the river bank, one mile from the town, where he held his court during the summer.

Nagar.—Village in the Kulū subdivision and *tahsil* of Kāngra District, Punjab, situated in $32^{\circ} 7' \text{ N.}$ and $77^{\circ} 14' \text{ E.}$, on the left bank of the Beās river, 14 miles north of Sultānpur, the *tahsil* head-quarters. Population (1901), 591. Nagar was the capital of the Kulū Rājās, whose ancient residence crowns an eminence looking down upon the river from a height of about 1,000 feet, and is now used as the residence of the Assistant Commissioner, Kulū. It was greatly damaged by the earthquake of April 4, 1905. It commands a magnificent view, and itself forms a striking feature of the village. Nagar is also the head-quarters of the Kulū Forest division and of the Assistant Engineer, Kulū, and contains a post and telegraph office.

Nirmand.—Village in the Kulū subdivision of Kāngra District, Punjab, situated in $31^{\circ} 26' \text{ N.}$ and $77^{\circ} 38' \text{ E.}$ Population (1901), 1,150. Near it stands an ancient temple dedicated to Parasu Rāma, in which is deposited a copperplate deed of grant in Sanskrit, probably of 612–3 A.D., recording the assignment of the village of Sulisagrāma by a king Samudrasena to the Brāhmins who studied the Atharva Veda at Nirmanda, a temple dedicated to the god Tripurantaka or Siva under the name of Mihiresvara or the Sun-god.

[*Corpus Inscriptionum Indicarum*, vol. iii, p. 286.]

Nūrpur Town.—Head-quarters of the *tahsil* of the same name in Kāngra District, Punjab, situated in $32^{\circ} 18' \text{ N.}$ and $75^{\circ} 55' \text{ E.}$, 37 miles west of Dharmśāla on the road to Pathānkot, on the western side of a hill which rises sharply from the plain. Population (1901), 4,462. Nūrpur was anciently called Dhameri

trict, Punjab, situated in $32^{\circ} 22' N.$ and $77^{\circ} 17' E.$, across the Himālayan range which divides the Kulū valley from Lāhul. The pass leads from Koksar in Lāhul to Ralla in Kothi Manāli of Kulū. The elevation is only 13,326 feet, a remarkably low level considering that the sides rise to 15,000 and 16,000 feet, while within 12 miles are peaks over 20,000 feet in height. The high road to Leh and Yārkand from Kulū and Kāngra goes over this pass, which is practicable for laden mules and ponies. The pass is dangerous, and generally impassable between November and the end of March or even later. Through it the monsoon rains reach the Chandra valley, and the Beās rises on its southern slope.

Sujānpur Tira.—Village in the Hamīrpur *tahsil* of Kāngra District, Punjab, situated in $31^{\circ} 50' N.$ and $76^{\circ} 31' E.$, on the Beās. Population (1901), 5,267. The place derives the second part of its name from the Tira or 'palace' commenced by Abhāya Chand, the Katoch king of Kāngra, in 1758. His grandson Sujān Chand founded the town, and Sansār Chand, the great Katoch ruler, completed it and held his court here. The site is picturesque, with a fine parade-ground and grassy plain surrounded by trees; but the palace, a highly finished building of regal proportions, has fallen into disrepair since the Katoch family took up its residence in LAMBĀGRAON.

Sultānpur Village.—Village in the Kulū subdivision and head-quarters of the Kulū *tahsil*, Kāngra District, Punjab, situated in $31^{\circ} 58' N.$ and $77^{\circ} 10' E.$, at the junction of the Beās and Sarvari and below the Bhuhhu pass, at an elevation of 4,092 feet. Population (1901), 1,609. It was founded in the seventeenth century by the Kulū Rājā, Jagat Singh. The place is an important dépôt for the trade between the Punjab and Leh and Central Asia. It has an out-still for the manufacture of country spirit, a vernacular middle school, and a Government dispensary, under an assistant surgeon. The village was nearly destroyed by the earthquake of April 4, 1905.

Hoshiārpur District.—Submontane District in the Jullundur Division, Punjab, lying between $30^{\circ} 59'$ and $32^{\circ} 5' N.$ and $75^{\circ} 30'$ and $76^{\circ} 38' E.$, with an area of 2,244 square miles. Its eastern boundary consists of the western slopes of the Sola Singhi hills, a range of the Outer Himālayan system, which separates it from Kāngra District and Bilāspur State, and whose highest elevation (3,896 feet) within the District is at Bharwain, its summer station. Parallel with this range and lying north-west-by-south-east runs the northern section of the Siwālik range, locally known as the Katār Dhār. Between

Boundaries, configuration, and hill and river systems.

western, composed of alluvium; and a north-eastern, comprising the Siwālik and sub-Himālayan ranges running north-west from the Sutlej. These ranges are formed of the sandstones and conglomerates of the upper Siwālik series, which is of Upper Tertiary (pliocene) age¹.

Botany.

The southern portion of the District hardly differs botanically from the general character of the Central Punjab, though the mango and other sub-tropical trees thrive particularly well in cultivation. The submontane part has a true Siwālik flora, and in one valley in the extreme north of the District the *sāl* (*Shorea robusta*) finds its northern limit. The *ber* (*Zizyphus jujuba*) is plentiful.

Fauna.

Wild animals include leopards (in the hills), hyenas, wolves, antelope, deer, &c. Feathered game is fairly plentiful.

Climate and temperature.

Owing to the proximity of the hills, the heat in the plains is never excessive, while Bharwain, the summer station of the District, enjoys a mild hot season. The chief cause of mortality is fever. Plague entered the District from Jullundur in 1897; and, in spite of considerable opposition culminating in a serious riot at Garhshankar, vigorous measures were for three years taken to stamp out the disease, and to some extent successfully.

Rainfall.

The annual rainfall varies from 31 inches at Garhshankar to 34 at Hoshiārpur; of the rainfall at the latter place 28 inches fall in the summer months, and 6 in the winter. The greatest fall recorded of late years was 79 inches at Una in 1881-2, and the least 13 inches at Dasūya in 1901-2.

History.

Tradition associates several places, notably DASŪYA, with the Pāndavas of the Mahābhārata, but archaeological remains are few and unimportant. Prior to the Muhammadan invasions, the modern District undoubtedly formed part of the Katoch kingdom of Trigartta or Jullundur; and when at an unknown date that kingdom broke up into numerous petty principalities, the Jaswān Rājās, a branch of the Katoch dynasty, established themselves in the Jaswān Dūn. The plains probably came permanently under Muhammadan rule on the fall of Jullundur in 1088, but the hills remained under Hindu chieftains. In 1399 Tīmūr ravaged the Jaswān Dūn on his way to capture Kāngra fort. At this period the Khokhars appear to have been the dominant tribe in the District; and in 1421 Jasrath, their chief, revolted against the weak Saiyid dynasty, but in 1428 he was defeated near Kāngra. After that event several

¹ Medlicott, 'On the Sub-Himālayan Ranges between the Ganges and Rāvi,' *Memoirs, Geological Survey of India*, vol. iii, pt. ii.

Pathān military colonies were founded in the plain along the base of the Siwāliks, and BAJWĀRA became the head-quarters. The fort of Malot, founded in the reign of Sultān Bahlol by a Pathān grantee of the surrounding country, was Daulat Khān's stronghold. It played an important part in Bābar's invasion, and after its surrender Bābar crossed the Siwāliks into the Jaswān Dūn and marched on Rūpar. Under Sher Shāh, the governor of Malot ruled all the hills as far as Kāngra and Jammu, and organized some kind of revenue system. By this time the Dadwāls, another Katoch family, had established themselves at Datārpur in the Siwāliks. On Akbar's accession, the District became the centre of Sikandar Sūri's resistance to the Mughal domination, but he was soon reduced, and in 1596 the Jaswāns were disposed of without actual fighting. After this the District settled down under the Mughal rule and was included in Todar Mal's great revenue survey.

The Rājās of Jaswān and Datārpur retained possession of their fiefs until 1759, when the rising Sikh adventurers, who had already established themselves in the lowlands, commenced a series of encroachments upon the hill tracts. The Jaswān Rājā early lost a portion of his dominions; and when Ranjit Singh concentrated the whole Sikh power under his own government, both the petty Katoch chiefs were compelled to acknowledge the supremacy of Lahore. At last, in 1815, the ruler of Jaswān was forced by Ranjit Singh to resign his territories in exchange for an estate held on feudal tenure (*jāgīr*); and three years later his neighbour of Datārpur met with similar treatment. Meanwhile, the lowland portion of the District had passed completely into the hands of the Sikh chieftains, who ultimately fell before the absorbing power of Ranjit Singh; and by the close of 1818 the whole country from the Sutlej to the Beās had come under the government of Lahore. A small portion of the District was administered by deputies of the Sikh governors at Jullundur; but in the hills and the Jaswān Dūn, Ranjit Singh assigned most of his conquests to feudal rulers (*jāgīrdārs*), among whom were the deposed Rājās of Datārpur and Jaswān, the Sodhis of Anandpur, and the Sikh prelate Bedi Bikramā Singh, whose head-quarters were fixed at Una. Below the Siwālik Hills, Sher Singh (afterwards Mahārājā) held Hājipur and Mukeriān, with a large tract of country, while other great tributaries received assignments elsewhere in the lowland region. Shaikh Sandhe Khān had charge of Hoshiārpur at the date of the British annexation, as deputy of the Jullundur governor.

After the close of the first Sikh War in 1846, the whole tongue of land between the Sutlej and the Beās, together with the hills now constituting Kāngra District, passed into the hands of the British Government. The deposed Rājās of Datārpur and Jaswān received cash pensions from the new rulers, in addition to the estates granted by Ranjit Singh; but they expressed bitter disappointment that they were not restored to their former sovereign positions. The whole of Bedi Bikramā Singh's grant was resumed, and a pension was offered for his maintenance, but indignantly refused; while part of the Sodhī estates were also taken back. Accordingly, the outbreak of the Multān War and the revolt of Chattar Singh, in 1848, found the disaffected chieftains ready for rebellion, and gave them an opportunity for rising against the British power. In conjunction with the Kāngra Rājās, they organized a revolt, which, however, was soon put down without serious difficulty. The two Rājās and the other ringleaders were captured, and their estates were confiscated. Rājā Jagat Singh of Datārpur lived for about thirty years at Benares on a pension from the British Government. Umed Singh of Jaswān received a similar allowance; Ran Singh, his grandson, was permitted to reside at Jammu in receipt of his pension; and on the assumption by Queen Victoria of the Imperial title in January, 1877, the *jāgir* confiscated in 1848 was restored to Tikka Raghunāth Singh, great-grandson of the rebel Rājā, and son-in-law of the Mahārājā of Kashmīr. Bedi Bikramā Singh followed Chattar Singh at Gujrāt, but surrendered at the close of the war and obtained leave to reside at Amritsar. His son, Sujān Singh, receives a Government pension, and has been created an honorary magistrate. Many other local chieftains still retain estates, the most noticeable being the Rānās of Mānaswāl and the Rais of Bhabaur. The sacred family of the Sodhīs, lineal descendants of Rām Dās, the fourth Sikh Gurū, enjoy considerable pensions.

The Mutiny did not affect this District, the only disturbances being caused by the incursion of servants from Simla, who spread exaggerated reports of the panic there, and the rapid march of a party of mutineers from Jullundur, who passed along the hills and escaped across the Sutlej before the news had reached head-quarters.

The population of the District at the last four enumerations was: (1868) 937,699, (1881) 901,381, (1891) 1,011,659, and (1901) 989,782, dwelling in 11 towns and 2,117 villages. It decreased by 2.1 per cent. during the last decade, the

decrease being greatest in the Hoshiārpur *tahsil* (3.6) and least in Garhshankar. The density of the population is high. The District is divided into the four *tahsils* of HOSHIĀRPUR, DASŪYA, UNA, and GARHSHANKAR, the head-quarters of each being at the place from which it is named. The chief towns are the municipalities of HOSHIĀRPUR, the head-quarters of the District, TĀNDA-URMAR, HARIĀNA, GARHDIWĀLA, UNA, ANANDPUR, MUKERIĀN, DASŪYA, and MĪĀNI.

The following table shows the chief statistics of population in 1901 :—

<i>Tahsil.</i>	Area in square miles.	Number of		Population.	Population per square mile.	Percentage of variation in population between 1891 and 1901.	Number of persons able to read and write.
		Towns.	Villages.				
Hoshiārpur	508	4	489	264,112	519.9	- 3.6	12,388
Dasūya	501	4	633	239,004	477.1	- 2.2	6,952
Una	717	2	523	225,198	314.1	- 1.8	11,680
Garhshankar	509	1	472	261,468	513.7	- 1.0	8,360
District total	2,244	11	2,117	989,782	441.0	- 2.1	39,380

NOTE.—The figures for the areas of *tahsils* are taken from the revenue returns. The total District area is that given in the *Census Report*.

Hindus (603,710) comprise more than 60 per cent. of the total; Muhammadans number 312,958, or 32 per cent.; and Sikhs, 71,126, or 7 per cent. Punjabi is the language chiefly spoken.

The Jats or Jāts (153,000) are first in point of numbers, comprising 15 per cent. of the total. They are chiefly Hindus, but include 35,000 Sikhs and 26,000 Muhammadans. The next most numerous are the Rājputs (94,000), who comprise more than 9 per cent. of the population; they are mostly Hindus in the hills and Muhammadans in the plains. The Gūjars (78,000) are a pastoral people, who are found mainly in the Siwālīks. The Pathāns (7,000) are descendants of colonists planted by the Afghān invaders; their villages originated in small brick fortifications, and are disposed part in a long line parallel to the Siwālīks, as a protection against invasion from the hills, part in a cluster guarding the Srd Gobindpur ferry on the Beās. The Mahtons (10,000) are by their own account Rājputs who have descended in the social scale owing to their practice of widow marriage. They are either Hindus or Sikhs. The Kanets (1,700) are said to have the same origin as the Mahtons, and are equally divided between Hindus and Sikhs. The Arains (35,000) and

Castes and occupations.

Sainis (45,000) are industrious and careful cultivators; the former are entirely Muhammadan, the latter Hindu or Sikh. Other landowning tribes are the Awāns (13,000) and Dogars (5,000), who are chiefly Muhammadans, and Ghirths (47,000), locally known as Bahtis and Chāhngs, who are almost entirely Hindus. The Brāhmans (80,000) are extensive landholders in the hills and also engage in trade. Of the commercial classes, the Khattris (21,000) are the most important. Of the menial tribes may be mentioned the Chamārs (leather-workers, 121,000), Chūhrās (scavengers, 19,000), Jhīnwars (water-carriers, 24,000), Julāhās (weavers, 24,000), Kumhārs (potters, 11,000), Lohārs (blacksmiths, 16,000), Nais (barbers, 14,000), Tarkhāns (carpenters, 33,000), and Telis (oil-pressers, 12,000). About 60 per cent. of the population are dependent on agriculture.

Christian missions.

The Ludhiāna Mission has a station at Hoshiārpur, dating from 1867, and five out-stations in the District; its staff consists of 20 persons, with Scripture-readers and catechists, and includes a qualified lady doctor. The District contained 785 native Christians in 1901.

General agricultural conditions.

The SIWĀLIK HILLS, which form the backbone of the District, are for the most part soft sandstone, from which by detrition is formed a belt of light sandy loam known as the Kandī tract, lying immediately at their foot. This soil requires frequent, but not too heavy, showers, and the tract is to a large extent overspread with shifting sand blown from the torrent beds. Parallel to this comes a narrow belt, in which the loam is less mixed with sand; and this is followed by the exceptionally fertile Sirwāl belt, in which the water-level is near the surface, and the loam, little mixed with sand except where affected by the hill torrents, is of a texture which enables it to draw up and retain the maximum of moisture. South-east of Garhshankar is a tract of clayey loam, probably an old depression connected with the Bein river, while north of Dasūya, and so beyond the range of the Siwālik denudation, is an area probably formed by the alluvion of the Beās, which is one of the most fertile in the District. The soil of the Una valley is for the most part a good alluvial loam, especially fertile on the banks of the Sutlej.

Chief agricultural statistics and principal crops.

The District is held almost entirely on the *bhaiyāchārū* and *patlidāri* tenures, *samūdāri* lands covering only about 120 square miles. The area for which details are available in the revenue records of 1903-4 is 2,235 square miles, as shown in the table on next page.

<i>Takail</i>	Total	Cultivated.	Irrigated.	Cultivable waste.
Hoshiarpur . .	508	261	15	63
Dasūya . .	501	327	30	66
Una . .	717	267	6	98
Garhshankar . .	509	291	40	48
Total	2,235	1,146	91	275

The chief crops of the spring harvest are wheat and gram, which occupied 452 and 225 square miles respectively in 1903-4. Barley occupied only 27 square miles. There were 154 acres of poppy. In the autumn harvest maize is the most important crop (212 square miles), and forms the staple food of the people; pulses occupied 81 square miles and rice 39. Very little great or spiked millet is grown. Sugar-cane is a very valuable crop, covering 38 square miles. Cotton occupied 27 square miles.

The cultivated area increased by about 3 per cent. during the twenty years ending 1901, its extension having been much hindered by the destructive action of the mountain torrents. Outside their range of influence, almost every cultivable acre is brought under the plough; cash rents rise to as much as Rs. 50 per acre, and holdings as small as half an acre are found. Maize is the only crop for which any pains are taken to select the best seed. Advances under the Land Improvement Loans Act are little sought after; in many places unbricked wells, dug at a trifling cost, answer every purpose, while in others the water lies too deep for masonry wells to be profitable. Even in the Sirwāl tract, where there is a tendency to increase the number of masonry wells, they are more often dug by a large number of subscribers, who each own a small holding, in combination, than by means of loans from Government.

The cattle are mostly small and weak, especially in the hills, and such good bullocks as are to be found are imported. Although Bajwāra and Tihāra are mentioned in the *Ain-i-Akbari* as famous for their horses, the breed now found is very poor. The District board maintains a pony and 5 donkey stallions. The people possess few sheep. Goats, which used to be grazed in the Siwāliks in large numbers, and caused much damage, have now under the provisions of the *Chos* Act been excluded from the western slopes of that range. Camels are kept in a few villages. A good deal of poultry is bred for the Simla market.

Improvements in agricultural practice.

Cattle, horses, goats, &c.

demand for inferior work in Europe and America has led to deterioration. Lacquered wooden ware and silver-work, with some ivory-carving, are also produced. The carpenters have a reputation for good work, and there is a considerable manufacture of glass bangles. Ornamented shoes are also made, and buskins, breeches, and coats of soft *sāmbār* (deer) skin. At DASŪYA cups and glasses of coloured glass are made. The light 'paper' pottery is made at TĀNDA, and brass vessels at Bahādurpur.

Trade is chiefly confined to the export of raw materials, including rice, gram, barley, sugar, hemp, safflower, fibres, tobacco, indigo, cotton, lac, and a small quantity of wheat. Of these, sugar forms by far the most important item. The cane grows in various portions of the plains, and sugar is refined in the larger towns and exported to all parts of the Punjab, especially to Amritsar. The principal imports are cotton piece-goods from Delhi and Amritsar, millets and other coarse grains from the south of the Sutlej, and cattle from Amritsar and the south. Commerce and trade.

The District contains no railways, but a line from Jullundur Roads to Hoshiārpur is contemplated. The road from Jullundur to Kāngra runs across the District, and transversely to this two lines of road, one on either side of the Siwāliks, carry the submontane traffic between the Beās and Sutlej. The total length of metalled roads is 37 miles, and of unmetalled roads 737 miles. Of these, 21 miles of metalled and 28 miles of unmetalled roads are under the Public Works department, and the rest under the District board. The Sutlej is navigable below Rūpar during the summer months, and the Beās during the same period from the point where it enters the District. The Sutlej is crossed by six and the Beās by ten ferries, nine of which are managed by the District board.

None of the famines which have visited the Punjab since annexation affected Hoshiārpur at all seriously; the rainfall is generally so plentiful and the soil so moist that a great part of the District is practically secure from drought. The area of crops matured in the famine year 1899-1900 amounted to 7.6 per cent. of the normal. Famine.

The District is in charge of a Deputy-Commissioner, aided by five Assistant or Extra Assistant Commissioners, of whom one is in charge of the District treasury. For general administrative purposes the District is divided into four *tahsils*—HOSHIARPUR, GARHSHANKAR, UNA, and DASŪYA—each with a *tahsildār* and a *naib-tahsildār*. District subdivisions and staff.

Civil
justice and
crime.

The Deputy-Commissioner as District Magistrate is responsible for criminal justice, and civil judicial work is under a District Judge. Both officers are supervised by the Divisional Judge of the Hoshiārpur Civil Division. There are six Munsifs, three at head-quarters and one at each outlying *tahsil*. The predominant form of crime is burglary.

Land
revenue
adminis-
tration.

Under Sikh rule the District was unusually fortunate, in that Mir Rūp Lāl was appointed to the administration of the *doāb* in 1802. He was able and honest, allied to local families by marriage, and interested in the welfare of the people. His assessments were light and easily paid. In 1839 he was succeeded by a different type of ruler, Shaikh Ghulām Muḥ. ud-dīn, whose oppressive administration lasted until the British conquest. The summary settlement of the whole *doāb* was promptly made on annexation by John Lawrence. The demand was 13½ lakhs. Except in Garhshankar, the summary settlement worked well. In 1846 the regular settlement of Jullundur and Hoshiārpur began. Changes in officers and the pressure of other work prevented anything being done until 1851, when a Settlement officer was appointed to Hoshiārpur. His charge, however, did not correspond with the present District, as other officers settled the Una *tahsil*, part of Garhshankar, and the Mukerīān tract. The result for the District as now constituted was an increased demand of Rs. 9,000. Many assignments of revenue, however, had in the meantime been resumed, and the assessment was really lighter than the summary demand. Between 1869 and 1873 a revision of the records-of-right in the hilly tracts was carried out. The settlement was revised between 1879 and 1882. The total revenue assessed was 13½ lakhs, of which Rs. 71,000 are assigned, while a water rate was imposed on the lands irrigated by the Shāh Nahr Canal. Government subsequently took over the canal, and the shareholders became annuitants, receiving 8 annas out of every 18 annas imposed as water rate. The canal is managed by the Deputy-Commissioner, and all profits are ear-marked to the improvement and extension of the watercourses. The average assessment on 'dry' land is Rs. 1-15 (maximum Rs. 4-4-0, and minimum 6 annas), and that on 'wet' land Rs. 4-8-0 (maximum Rs. 6, and minimum Rs. 3). The demand for 1903-4, including cesses, was 16-4 lakhs. The average size of a proprietary holding is 1-5 acres.

The collections of land revenue alone and of total revenue are shown in the table on next page, in thousands of rupees.

	1880-1.	1890-1.	1900-1.	1903-4.
Land revenue . . .	12,60	13,65	13,87	13,74
Total revenue . . .	15,84	17,89	19,93	20,36

The District possesses nine municipalities, HOSHIARPUR, Local TANDA- URMAR, HARIANA, GARHWALA, UNA, ANANDPUR, and municipal. MUKERIAN, DASUYA, and MIANI; and one 'notified area,' Khānpur. Outside these, local affairs are managed by the District board, which in 1903-4 had an income of Rs. 1,67,000. The expenditure in the same year was Rs. 1,49,000, education being the largest item.

The regular police force consists of 480 of all ranks, including 93 municipal police. The Superintendent usually has three inspectors under him. The village watchmen number 1,765. There are 15 police stations and 4 road-posts. The District jail at head-quarters has accommodation for 106 prisoners. Police and jails.

The District stands twelfth among the twenty-eight Districts of the Province in respect of the literacy of its population. In 1901 the proportion of literate persons was 4 per cent. (7.3 males and 0.2 females). The number of pupils under instruction was 4,813 in 1880-1, 9,749 in 1890-1, 9,639 in 1900-1, and 10,772 in 1903-4. In the last year the District had 13 secondary and 146 primary (public) schools, and 3 advanced and 75 elementary (private) schools, with 278 girls in the public and 315 in the private schools. The Hoshiarpur municipal high school was founded in 1848 to teach Persian and Hindi, and was brought under the Educational department in 1856. The study of English was introduced in 1859, Arabic and Sanskrit in 1870, at about which time it was made a high school. There are also three unaided Anglo-vernacular high schools, one vernacular high school, and eight middle schools. The Ludhiāna Mission supports a girls' orphanage and boarding-school, and two day-schools for Hindu and Muhammadan girls. The total number of pupils in public institutions in 1904 was about 7 per cent. of the number of children of school-going age. The total expenditure on education in 1903-4 was Rs. 74,000, the greater part of which was met from Local funds. Education.

The civil hospital at Hoshiarpur has accommodation for 33 male and 12 female in-patients. The District also contains fourteen outlying dispensaries. At these institutions in 1904 a total of 145,455 out-patients and 1,170 in-patients were Hospitals and dispensaries.

The Jandbāri *taluka*, a small piece of territory on the left bank of the Sutlej, is also included in this *tahsil*. The population in 1901 was 225,198, compared with 229,308 in 1891. It contains the towns of UNA (population, 4,746), the headquarters, and ANANDPUR (5,028); and 523 villages. The land revenue and cesses amounted in 1903-4 to Rs. 3.2 lakhs.

Garhshankar Tahsil.—*Tahsil* of Hoshiarpur District, Punjab, lying between $30^{\circ} 59'$ and $31^{\circ} 31'$ N. and $75^{\circ} 51'$ and $76^{\circ} 31'$ E., with an area of 509 square miles. The population in 1901 was 261,468, compared with 264,141 in 1891. GARHSHANKAR (population, 5,803) is the head-quarters. It also contains 472 villages, of which JAJON is of some historical interest. The land revenue and cesses amounted in 1903-4 to 4.4 lakhs. The physical features of the *tahsil* are similar to those of Hoshiarpur, except that the hills are steeper and torrent-beds less frequent. The Sutlej forms the southern boundary.

Anandpur.—Town in the Una *tahsil* of Hoshiarpur District, Punjab, situated in $31^{\circ} 14'$ N. and $76^{\circ} 31'$ E., on the left bank of the Sutlej. Population (1901), 5,028. Founded by the Sikh Gurū, Tegh Bahādur, it became a stronghold of the tenth Gurū, Govind Singh, who was defeated here by the troops of Aurangzeb. It is still of religious importance as the head-quarters of the branch of the Sodhīs descended from Tegh Bahādur's nephew, and contains many Sikh shrines and monuments of interest. The municipality was created in 1867. The income and expenditure during the ten years ending 1902-3 averaged Rs. 2,900. In 1903-4 the income was Rs. 3,000, chiefly derived from octroi; and the expenditure was Rs. 2,600. It maintains a Government dispensary.

Bajwāra.—Ancient town in the District and *tahsil* of Hoshiarpur, Punjab, situated in $31^{\circ} 31'$ N. and $75^{\circ} 57'$ E., 2 miles south-east of Hoshiarpur. Population (1901), 2,653. It is said to have been founded by immigrants from Ghazni, and was once the chief town of the District, tradition relating that its walls were 18 miles in circumference. It is mentioned in the *Ain-i-Akbari* as famous for horses. Todar Mal, Akbar's minister, is said to have broken up the town into small divisions as a punishment for the inhabitants not receiving him with proper respect. In later times it was held by Sirdār Bhūp Singh, Faizullahpuria, who was ousted in 1801 by Rājā Sansār Chand. The latter built a fort here, which was taken by Ranjīt Singh in 1825. Since then the town has

declined and its ruins have been largely used for road-metal. The fort was utilized as a military prison in the earlier years of the British administration, but was afterwards dismantled; and at the present time only two ruined bastions are in existence. The town has an Anglo-vernacular high school.

Bharwain.—Hill sanitarium in the *tahsil* of Hoshiārpur District, Punjab, situated in $31^{\circ} 48' N.$ and $76^{\circ} 10' E.$ Population (March, 1901), 17. It lies on the Jullundur-Dharm-sāla road, 28 miles from Hoshiārpur town, near the borders of Hoshiārpur and Kangra Districts, on the summit of the Sola Singhi range, at an elevation of 3,896 feet above the sea.

Dasūya Town.—Head-quarters of the *tahsil* of the same name in Hoshiārpur District, Punjab, situated in $31^{\circ} 49' N.$ and $75^{\circ} 40' E.$, 25 miles north-west of Hoshiārpur town. Population (1901), 6,404. Dasūya is one of the numerous places popularly identified with the capital of the Rājā Virāta of the Mahābhārata. It contains a ruined fort, mentioned in the *Ain-i-Akbarī*, which was one of the strongholds of the Rāmgarhias, and was annexed in 1817 by Ranjit Singh. The municipality was created in 1867. The income during the ten years ending 1902-3 averaged Rs. 2,900, and the expenditure Rs. 2,700. In 1903-4 the income was Rs. 3,700, chiefly derived from octroi; and the expenditure was Rs. 2,900. It maintains a vernacular middle school and a Government dispensary.

Garhdiwāla.—Town in the *tahsil* and District of Hoshiārpur, Punjab, situated in $31^{\circ} 45' N.$ and $75^{\circ} 46' E.$, 17 miles from Hoshiārpur. Population (1901), 3,652. The chief trade is in sugar. The municipality was created in 1867. The income during the ten years ending 1902-3 averaged Rs. 2,300, and the expenditure Rs. 2,200. In 1903-4 the income was Rs. 2,900, chiefly derived from octroi; and the expenditure was Rs. 2,600. It maintains a Government dispensary.

Garhshankar Town.—Head-quarters of the *tahsil* of the same name in Hoshiārpur District, Punjab, situated in $31^{\circ} 13' N.$ and $76^{\circ} 9' E.$ Population (1901), 5,803. A fort built on the site of the present town is said to have been taken by Mahmūd of Ghazni, and subsequently given by Muhammad of Ghor to the sons of Rājā Mān Singh of Jaipur. Its inhabitants are Rājputs, who expelled the Mahtons about A.D. 1175. It possesses a considerable trade in sugar and tobacco. The municipality, founded in 1882, was abolished in 1891. The town has a vernacular middle school and a Government dispensary.

Hariāna Town.—Town in the District and *tahsil* of Hoshiarpur, Punjab, situated in $31^{\circ} 38' N.$ and $72^{\circ} 52' E.$, 9 miles from Hoshiarpur. Population (1901), 6,005. From 1846 to 1860 it was the head-quarters of the *tahsil*. Its chief trade is in sugar. The municipality was created in 1867. The income and expenditure during the ten years ending 1902-3 averaged Rs. 3,000. In 1903-4 the income was Rs. 3,200, chiefly derived from octroi; and the expenditure was Rs. 3,100. It maintains a vernacular middle school, and the town has a dispensary.

Hoshiarpur Town.—Head-quarters of the District and *tahsil* of Hoshiarpur, Punjab, situated in $31^{\circ} 32' N.$ and $75^{\circ} 52' E.$, at the foot of the Siwāliks, on the Jullundur-Dharmasāla road, 25 miles from Jullundur. The Divisional and Sessions Judge of the Hoshiarpur Civil Division has his head-quarters here. Population (1901), 17,549. The town was seized in 1809 by Ranjit Singh, and formed the head-quarters of the governors of the Jullundur Doāb. It is famous for the production of articles of wood inlaid with ivory. The municipality was created in 1867. The income during the ten years ending 1902-3 averaged Rs. 47,500, and the expenditure Rs. 47,400. In 1903-4 the income was Rs. 58,600, chiefly derived from octroi; and the expenditure was Rs. 44,900. It maintains a high school, the management of which was taken over by the Educational department in 1904. There are two other unaided high schools in the town, which also possesses a civil hospital; and the Ludhiāna Mission maintains a female hospital.

Jailon.—Ancient town in the Garhshankar *tahsil* of Hoshiarpur District, Punjab, situated in $31^{\circ} 21' N.$ and $76^{\circ} 13' E.$, on the outer edge of the Siwāliks, 10 miles north of Garhshankar. Population (1901), 2,705. Though now of small importance, it was in early days the seat of the Jaswāl Rājās. Rāja Rām Singh first took up his residence here; and the fort which commanded the pass in the hills is said to have been constructed in 1701, and to have been taken by Ranjit Singh in 1815. It was dismantled at annexation by the British Government. The ruins of the palaces of the Jaswāl Rājās are still visible above the town. The place was till lately an emporium of trade, second only to Hoshiarpur; and even now a good deal of cloth, both country and English, passes through towards the hills, while the produce of the hills, such as rice, turmeric, &c., passes down to the plains.

Malot.—Ancient fortress, now in ruins, in the District and

tahsil of Hoshiārpur, Punjab, situated in $31^{\circ} 50'$ N. and 76° E. It was founded by a Pathān general in the reign of Bahlol Lodi (1451-89), and became under Sher Shāh the capital of the tracts which now form Hoshiārpur and Kāngra Districts. In 1526 it was surrendered to Bābar by Daulat Khān, ruler of the Punjab, and in later times it fell into the hands of the hill Rājputs.

Miāni.—Town in the Dasūya *tahsil* of Hoshiārpur District, Punjab, situated in $31^{\circ} 43'$ N. and $75^{\circ} 34'$ E., on the Beās. Population (1901), 6,118. It is of no commercial importance. The municipality was created in 1874. The income during the ten years ending 1902-3 averaged Rs. 1,700, and the expenditure Rs. 1,600. In 1903-4 the income was Rs. 1,800, chiefly derived from octroi; and the expenditure was Rs. 2,300. It maintains a Government dispensary.

Mukeriān.—Town in the Dasūya *tahsil* of Hoshiārpur District, Punjab, situated in $31^{\circ} 57'$ N. and $75^{\circ} 38'$ E. Population (1901), 3,589. It was a stronghold of Sardār Jai Singh Kanhaya, whose power was paramount in the Punjab about 1774-84; and Ranjīt Singh's reputed son, Sher Singh, who afterwards became Mahārājā, was born here. The town has no trade of any importance. The municipality was created in 1867. The income and expenditure during the ten years ending 1902-3 averaged Rs. 3,100. In 1903-4 the income was Rs. 3,200, chiefly derived from octroi; and the expenditure was Rs. 2,900. It maintains a vernacular middle school and a Government dispensary.

Sola Singhi (or Chintpurni).—Mountain range in Hoshiārpur District, Punjab, forming the eastern boundary of the Jaswān Dūn. It commences at a point close to Talwāra, on the Beās river, and runs in a south-eastward direction between the Districts of Hoshiārpur and Kāngra. The range as it passes southwards increases steadily both in width and elevation, until it reaches its highest point at the small hill station of Bharwain, 28 miles from Hoshiārpur town on the Dharmasāla road and 3,896 feet above the sea. At this point the ridge is 14 miles across. Thence it continues till it crosses the valley of the Sutlej, its northern slope sinking gradually into the Beās basin, while the southern escarpment consists in places of an abrupt cliff about 300 feet in height. The space between its central line and the level portion of the Jaswān Dūn is occupied by a broad table-land, thickly clothed with forest, and intersected by precipitous ravines, which divide the surface into natural blocks. Another range of hills in Hoshiārpur

District, which continues the line of the Sola Singhi and finally crosses the Sutlej into Bilāspur, terminates in the hill of Naina Devi, with its famous temple.

Tānda-Urmar.—The two towns of Tānda and Urmar are situated within a mile of one another in the Dasūya *tahsil* of Hoshiārpur District, Punjab, in $31^{\circ} 40' N.$ and $75^{\circ} 38' E.$, and form with their suburbs a single municipality. Their joint population was, in 1901, 10,247. The suburbs contain a shrine of the saint, Sakhi Sarwar. They form an *entrepôt* for country produce and cotton goods, and good pottery is made. The municipality was created in 1867. The income and expenditure during the ten years ending 1902-3 averaged Rs. 5,400. In 1903-4 the income was Rs. 5,800, chiefly derived from octroi; and the expenditure was Rs. 5,400. It maintains an Anglo-vernacular middle school and a Government dispensary.

Una Town.—Head-quarters of the *tahsil* of the same name in Hoshiārpur District, Punjab, situated in $31^{\circ} 28' N.$ and $76^{\circ} 17' E.$, in the Jaswān Dūn. Population (1901), 4,746. It is important as the seat of a branch of the Bedi clan descended from Kala Dhāri, a descendant of Nānak, the first Sikh Gurū, but has no commercial importance. The municipality was created in 1867. The income during the ten years ending 1902-3 averaged Rs. 2,700 and the expenditure Rs. 2,600. In 1902-3 the income was Rs. 3,800, chiefly derived from octroi; and the expenditure was Rs. 2,900. It maintains a vernacular middle school and a Government dispensary.

Jullundur District (*Jālandhar*).—District in the Jullundur Division, Punjab, lying between $30^{\circ} 56'$ and $31^{\circ} 37' N.$ and $75^{\circ} 5'$ and $76^{\circ} 16' E.$, with an area of 1,431 square miles. It occupies the southern part of the *doāb* (called the Bīst JULLUNDUR DOĀB), or country between the Beās and Sutlej. The latter river forms its southern border, separating it from Ludhiāna and Ferozepore, and in shape the District is an irregular triangle with its base on that river. The State of Kapūrthala separates it on the west from the Beās and its confluence with the Sutlej. Along its north-east border lies the District of Hoshiārpur; and in the centre of this portion, between the Jullundur and Nawāshahr *tahsils*, is a detached tract of Kapūrthala territory which forms the Phagwāra *tahsil* of that State. The valley of the Sutlej is marked by a high, well-defined bank. North of this lies a plateau whose highest point, at Rāhon near the eastern corner of the District, is

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in the winter. During the ten years ending 1903 the heaviest fall was 60 inches at Nawāshahr in 1900-1, and the lightest 11 inches, in 1899-1900, at Jullundur. There were disastrous floods in 1875 and 1878, owing to the railway embankment giving insufficient passage to the floods caused by the unusually heavy rains.

Early legends attribute the name of the *doāb* to the Daitya king Jālandhara, who was overwhelmed by Siva under a pile of mountains. His mouth, the legend says, was at JAWĀLA MUKHI, his feet at Multān, where in ancient times the Beās and Sutlej met, and his back under the upper part of the Jullundur Doāb, including the present District. The earliest mention of Jullundur occurs in the accounts of the Buddhist council held at Kuvana, near that city, early in the Christian era, under the auspices of Kanishka. When visited in the seventh century by Hiuen Tsiang, it was the capital of the Rājput kingdom of Trigartta, which also included the modern Districts of Hoshiārpur and Kāngra and the States of Chamba, Mandī, and Suket. Towards the end of the ninth century the *Rājatarangini* records the defeat of Prithwī Chandra, Rājā of Trigartta, by Sankara Chandra of Kashmīr. The town was taken by Ibrāhīm Shāh Ghori about 1088; and from that time the country appears to have remained under Muhammadan rule, the Jullundur Doāb being generally attached to the Lahore province. During the Saiyid dynasty (1414-51), however, the authority of Delhi was but weakly maintained; and the *doāb* became the scene of numerous insurrectionary movements, and especially of the long campaign of the Khokhar chief Jasrath against the ruling power. Near Jullundur the Mughal forces concentrated in 1555, when Humāyūn returned to do battle for his kingdom, and the neighbourhood was the scene of Bairām's defeat by the imperial forces in 1560. Adina Beg, the last and most famous of the governors of Jullundur, played an important part during the downfall of Muhammadan power in the Punjab, holding the balance between the Delhi emperor, the Sikhs, and Ahmad Shāh Durrāni. Both Nūrmahal and Kartārpur were sacked by Ahmad Shāh, and to avenge the desecration of the latter place the Sikhs burnt Jullundur in 1757.

The Sikh revolt against the Mughal power early found strong support in the District, and a number of petty chieftains rapidly established themselves by force of arms as independent rulers throughout the *doāb*. In 1766 the town of Jullundur fell into the hands of the Faizullahpuria *misl*, or confederacy, then led

History
and
archaeo-
logy.

by Khushhāl Singh. His son and successor, Budh Singh, built a masonry fort in the town, while several other leaders fortified themselves in its suburbs. Phillaur was seized by Budh Singh, who made it the capital of a considerable State; and the Muhammadan Rājputs of Nakodar (on whom the town had been conferred in *jāgīr* during the reign of Jahāngīr) were early ousted by Sardār Tāra Singh, Ghaiba, who built a fort, and made himself master of the surrounding territory. But meanwhile Ranjit Singh was consolidating his power in the south; Phillaur fell into his hands in 1807, and he converted the *sarai* into a fort to command the passage of the Sutlej; and in 1811 Dīwān Mohkam Chand was dispatched to annex the Faizullahpuria dominions in the Jullundur Doāb. Budh Singh fled across the Sutlej; and though his troops offered some resistance to the invader, the Mahārājā successfully established his authority in the autumn of that year. Thenceforth Jullundur was the capital of the Sikh possessions in the *doāb* till British annexation. Nakodar was seized in 1816, the petty Sardārs were gradually ousted from their estates, and the whole country brought under the direct management of the Sikh governors. Here, as elsewhere, their fiscal administration proved very oppressive, especially under Shaikh Ghulām Muht-ud-dīn, the last official appointed from the court of Lahore, a tyrannical ruler, who exacted irregular taxes. He made over the tract to his son, Imām-ud-dīn, but neither resided regularly in the *doāb*, their charge being entrusted to lieutenants, the best known of whom were Sandhe Khān in Hoshiārpur and Karīm Bakhsh in Jullundur.

At the close of the first Sikh War the British annexed the whole of the Jullundur Doāb, and it became the Commissioner-ship of the trans-Sutlej States. For two years the administration was directly under the Supreme Government; but in 1848 the Commissioner became subordinate to the Resident at Lahore, and in the succeeding year, when events forced on the annexation of the Punjab, the administration of the *doāb* was assimilated to the general system. The Commissioner's headquarters were fixed at Jullundur, and the three Districts of Jullundur, Hoshiārpur, and Kāngra were created. The fort at Phillaur was occupied as an artillery magazine, and cantonments formed there and at Nakodar, which continued to be occupied till 1857 and 1854 respectively.

In 1857 the native troops stationed at Jullundur and Phillaur mutinied and marched off to join the rebel forces at Delhi; the authorities were, however, not altogether unprepared, and

though the mutineers succeeded in escaping unmolested, they were prevented from doing serious damage. Rājā Randhīr Singh of Kapūrthala rendered invaluable assistance at this time, both in supplying troops and, by the exercise of his personal influence, in helping to preserve the peace of the *doāb*.

The tombs at NAKODAR and Nur Jahān's *sarai* at NŪR-MAHAL are the chief remains of antiquarian interest.

The population of the District at the last four enumerations The was : (1868) 794,418, (1881) 789,555, (1891) 907,583, and people. (1901) 917,587, dwelling in 10 towns and 1,216 villages. It increased by 1.1 per cent. during the last decade, the increase being greatest in the Jullundur *tahsil* and least in Phillaur. The density of population is the highest in the Province. The District is divided into the four *tahsils* of JULLUNDUR, NAWĀSHAHR, PHILLAUR, and NAKODAR, the head-quarters of each being at the place from which it is named. The chief towns are JULLUNDUR, the head-quarters of the District, and the municipalities of KARTĀRPUR, ALĀWALPUR, PHILLAUR, NŪRMAHAL, RĀBON, NAWĀSHAHR, BANGA, and NAKODAR.

The following table shows the chief statistics of population in 1901 :—

Tahsil.	Area in square miles.	Number of		Population.	Population per square mile.	Percentage of variation in population between 1891 and 1901.	Number of persons able to read and write.
		Towns.	Villages.				
Jullundur	391	3	409	305,976	782.4	+ 3.6	14,309
Nawāshahr	299	3	274	196,339	656.7	- 4.5	7,820
Phillaur.	298	3	222	192,860	647.2	+ 1.7	6,285
Nakodar	371	1	311	222,412	599.5	+ 2.5	4,789
District total	1,431	10	1,216	917,587	641.2	+ 1.1	33,103

NOTE.—The figures for the areas of *tahsils* are taken from the revenue returns. The total District area is that given in the *Census Report*.

Muhammadans number 421,011, or more than 45 per cent. of the total; Hindus, 368,051, or 40 per cent.; and Sikhs, 125,817, or nearly 14 per cent. Punjābī is spoken throughout the District.

By far the most numerous caste are the Jats or Jāts, who number 185,000, or 20 per cent. of the total, and own half the villages. About 185 clans are enumerated in the District. Some of these claim a Rājput origin; others have no traditions of being anything but Jats. Taken as a whole, they are an honest, industrious, sturdy, and vigorous folk, addicted to no form

Castes and occupations.

The District is held almost entirely by communities of Agricultural proprietors, large estates covering only about 37 square miles. Agricultural statistics and principal crops.

The area for which details are available from the revenue records of 1903-4 is 1,357 square miles, as shown below :—

<i>Tahsil.</i>	Total	Cultivated.	Irrigated.	Cultivable waste.
Jullundur . .	391	337	104	23
Nawāshahr . .	304	217	146	43
Phillaur . .	291	244	111	19
Nakodar . .	371	295	118	25
Total	1,357	1,093	479	110

The chief crop of the spring harvest is wheat, which occupied 430 square miles in 1903-4; gram covered 177 square miles; and barley only 16 square miles. Maize is the staple product of the autumn harvest, occupying 149 square miles, while pulses covered 121. Sugar-cane, which occupied 49 square miles, is commercially of the greatest importance to the cultivator, as he looks to this crop to pay the whole or the greater part of the revenue. But little great millet is grown (14 square miles), and practically no spiked millet; cotton covered 28 square miles, and rice 3,188 acres.

The cultivated area increased by only 800 acres in the ten years ending 1901, and hardly any further increase can be anticipated. There has, however, been a considerable development of well-sinking, more than 8,000 wells having been constructed since the settlement of 1880-5. Practically no cultivable land is now left untilled; and the pressure on the soil, which in 1901 was, excluding the urban population, 718 persons per cultivated square mile, can only be met by emigration. The District has already sent numbers of its sons to the Chenāb Colony, to the Jamrao Canal in Sind, to Australia and East Africa; and many are in civil or military employment in other parts of India. The remittances of these emigrants add enormously to the natural resources of the District, and the greater portion of the Government revenue collected in it is required by the post offices to enable them to cash money orders issued on them. Loans under the Land Improvement Loans Act for the construction of wells are popular and faithfully applied; in the five years ending 1904 more than Rs. 54,000 was advanced for this purpose. Nothing has been done in the way of improving the quality of the crops grown. Improvements in agricultural practice.

Cattle, horses, &c. Jullundur is not well adapted for breeding cattle, and it is estimated that for ploughing and working the wells no less than 10,000 bullocks per annum have to be imported. These are generally obtained at the Amritsar, Sirsa, and Hissâr fairs, and from Patiāla and Ferozepore. Although some places in the Jullundur Doāb are mentioned in the *Ain-i-Akbari* as famous for a breed of horses, the ponies are not now specially valuable. One horse and four donkey stallions are kept by the District board. There are very few camels, and sheep and goats are not important. The country is so fully cultivated that little ground for grazing is left, except along the Sutlej and in places near the Bein. Large numbers of cattle are driven from a distance to these favoured spots, and considerable sums are levied in grazing fees by the owners of the land.

Irrigation. Of the total area cultivated in 1903-4, 479 square miles, or 44 per cent., were classed as irrigated. Of this area, 477 square miles were irrigated from wells, and 1,455 acres from streams and tanks. In addition, 56 square miles, or 5 per cent., were subject to inundation from the Sutlej. Wells are the mainstay of the District; and there are 28,609 masonry wells worked by cattle, chiefly on the rope-and-bucket system, besides 464 unbricked wells, water-lifts, and lever wells. The Persian wheel is found where the soil is sandy and water near the surface.

Forests. The District contains two small plantations 'reserved' under the Forest Act, consisting chiefly of *shisham* and *kikar*, and covering 262 acres, with a military Reserve of 885 acres. It is on the whole well wooded, almost every one of the wells which it contains being surrounded by a small coppice; but, as already noticed, waste land is very scarce. Phillaur is the winter head-quarters of the Bashahr Forest division, and a great wood mart, to which quantities of timber are floated down the Sutlej and stored. Much also is brought for sale here from the Beās and the Sirhind Canal.

Minerals. *Kankar* is plentiful, the best beds being within a radius of ten miles from Jullundur town. Saltpetre is manufactured from saline earth.

Arts and manufactures. A great deal of cotton-weaving is carried on, the principal products being the coarse cotton cloth which supplies most of the dress of the people, and coloured stripes and checks. Large quantities of very coarse cotton fabrics (*khaddar*) are exported to Shikārpur and Sukkur in Sind. Rāhon had once a great reputation for a superior cotton longcloth, but the industry is almost extinct. Silk-weaving is carried on at Jullun-

dur, and in 1899 employed 250 looms, the estimated out-turn being valued at 2 lakhs. The gold and silver manufactures are flourishing, but in no way remarkable, and the out-turn is insufficient for local requirements. Besides ornaments, silver wire and gold and silver lace are made. The District has some reputation for carpenter's work, and chairs are made at Kartārpur for the wholesale trade. Brass vessels are manufactured in many parts, the output being valued at Rs. 27,000, of which half is exported. The thin pottery known as 'paper pottery' is made in the District, and glazed and coloured tile-work of unusual excellence is turned out at Jullundur by one man. There are two flour-mills at Jullundur town, and attached to one of them is a small iron and brass foundry. The number of factory employes in 1904 was 73.

The traffic of the District is mainly in agricultural produce. In ordinary years grain is imported from Ludhiāna, Ferozepore, and the Sikh States for export to the hills; other articles of import are piece-goods from Delhi, Bombay, and Calcutta, iron from Ferozepore, Amritsar, and Karāchi, brass and copper vessels from Jagādhri, Amritsar, and Delhi, rice from Kāngra, and salt from the Mayo Mines. Sugar and molasses are largely manufactured to supply the markets of Bikaner, Lahore, the Punjab, and Sind. Wheat, cotton cloth, and silk goods are the other principal exports. Commerce and trade.

The District is traversed by the main line of the North-Western Railway, and branch lines are contemplated from Jullundur town to Kapūrthala and Hoshiārpur. It is exceptionally well provided with roads, the total length of metalled roads being 158 miles and of unmetalled roads 337 miles. The most important of the former are the grand trunk road, which traverses the District parallel with the railway, and the road from Jullundur to Hoshiārpur; these, with some minor roads, 62 miles in length in all, are under the Public Works department, the rest being under the District board. The Sutlej is navigable only in the rains; there are twelve ferries. Railways and roads.

Jullundur, thanks to the excellence of its soil and the nearness of the hills, is but little liable to drought. None of the famines that have visited the Punjab since annexation has affected the District at all seriously, and it was classed by the Irrigation Commission of 1903 as secure from famine. The area of crops matured in the famine year 1899-1900 amounted to 76 per cent. of the normal. Famine.

The District is in charge of a Deputy-Commissioner, aided by three or four Assistant or Extra Assistant Commissioners. District subdivi-

sions and
staff.

It is divided into four *tahsils*, each under a *tahsildār* assisted by a *naib-tahsildār* : Jullundur comprises its northern portion, and Nawāshahr, Phillaur, and Nakodar, which lie in that order from east to west, the southern.

Civil jus-
tice and
crime.

The Deputy-Commissioner as District Magistrate is responsible for criminal justice. Civil judicial work is in charge of a District Judge, and both these officers are subordinate to the Divisional and Sessions Judge of the Jullundur Civil Division, which consists of the District of Jullundur alone. There are six Munsifs, three at head-quarters and one at each outlying *tahsil*. There are also a Cantonment Magistrate at Jullundur and eight honorary magistrates. The common forms of crime are burglary and theft.

Land
revenue
adminis-
tration.

In the revenue system of Akbar the present District formed part of the Duāba Bīst Jālandhar, one of the *sarkārs* of the Lahore *Sūbah*. The later Mughal emperors soon dropped the cash assessments of Rājā Todar Mal as unprofitably just, and leased clusters of villages to the highest bidder. Under the Sikh confederacies even this remnant of system disappeared, and the ruler took whatever he could get. Ranjīt Singh followed the same principle with a greater show of method, giving large grants of land in *jāgīr* on service tenure, and either leasing the rest to farmers or entrusting the collection of the revenue to *kārdārs*, who paid him as little as they dared. When in 1846 the *doāb* came into British possession, a summary settlement was made by John Lawrence. The assessment, which amounted to 13½ lakhs, worked well, and the total demand of the regular settlement (1846-51) was only Rs. 20,000 less. The assessment was again mainly guess-work, the demand of the summary settlement being varied only where circumstances suggested an increase or demanded some relief. A revision carried out between 1880 and 1885 resulted in a demand of 15 lakhs. This has been paid very easily ever since, and the District is prosperous and contented. The rates average Rs. 4-10-0 (maximum, Rs. 5-8-0; minimum, Rs. 3-12-0) on 'wet' land, and Rs. 1-8-0 (maximum, Rs. 2-4-0; minimum, 12 annas) on 'dry' land. The demand, including cesses, for 1903-4 was 17·8 lakhs. The average size of a proprietary holding is 1·8 acres.

The collections of land revenue alone and of total revenue are shown in the table on next page, in thousands of rupees.

Local and
municipal.

The District contains nine municipalities: JULLUNDUR, KARTĀRPUR, ALĀWALPUR, PHILLAUR, NŪRMAHAL, RĀHON, NAWĀSHAHR, BANGA, and NAKODAR. Outside these, local

affairs are managed by the District board, which in 1903-4 had an income of Rs. 1,55,000. The expenditure was Rs. 1,48,600, public works and education being the principal items.

	1880-1.	1890-1.	1900-1.	1903-4.
Land revenue . . .	12,24	13,82	14,22	14,05
Total revenue . . .	17,03	19,74	20,42	20,25

The regular police force consists of 453 of all ranks, including 56 cantonment and 78 municipal police. The Superintendent usually has three inspectors under him. The village watchmen number 1,305. There are twelve police stations, two road-posts, and two outposts. The fort at Phillaur was made over in 1891 to the Police Training School and central bureau of the Criminal Identification department. The District jail at head-quarters contains accommodation for 318 prisoners. The chief industries carried on in the jail are the manufacture of paper and lithographic printing. Police and jails.

The District stands nineteenth among the twenty-eight Districts of the Province in respect of the literacy of its population. In 1901 the proportion of literate persons was 3.6 per cent. (6.4 males and 0.3 females). The number of pupils under instruction was 7,624 in 1880-1, 15,102 in 1890-1, 13,191 in 1900-1, and 13,874 in 1903-4. The District possessed in 1903-4 a training school, 6 Anglo-vernacular high schools, 4 Anglo-vernacular and 7 vernacular middle schools, and 3 English and 124 vernacular primary schools for boys, and 23 vernacular primary schools for girls. In addition, there were 7 advanced and 262 elementary (private) schools. The number of girls in the public schools was 699, and in the private schools 941. The most important schools are in Jullundur town. The total expenditure on education in 1903-4 was 1.1 lakhs, the greater part of which was met by Local and Provincial funds. Education.

Besides the Jullundur civil hospital, the District has ten outlying dispensaries. At these institutions 154,504 out-patients and 4,247 in-patients were treated in 1904, and 12,883 operations were performed. The expenditure was Rs. 20,000, contributed in nearly equal shares by District and municipal funds. There is a leper asylum at Dakhni. Hospitals and dispensaries.

The number of successful vaccinations in 1903-4 was 21,801, representing 24 per 1,000 of the population. Vaccination is compulsory in the town of Jullundur. Vaccination.

[H. A. Rose, *District Gazetteer* (in press); W. E. Purser, *Settlement Report* (1892).]

Jullundur Tahsil (*Jālandhar*).—Northern *tahsil* of Jullundur District, Punjab, lying between $31^{\circ} 12'$ and $31^{\circ} 37'$ N. and $75^{\circ} 26'$ and $75^{\circ} 49'$ E., with an area of 391 square miles. The population in 1901 was 305,976, compared with 295,301 in 1891. The head-quarters are at the town of JULLUNDUR (population, 67,735); and it also contains the towns of KARTĀRPUR (10,840) and ALĀWALPUR (4,423), with 409 villages. The land revenue and cesses amounted in 1903-4 to 4.8 lakhs. The greater part of the *tahsil* consists of an upland plateau, with a light soil and frequent sand-hillocks, but along the north-eastern border is a belt of extremely fertile land averaging about 6 miles in width.

Nawāshahr Tahsil.—Eastern *tahsil* of Jullundur District, Punjab, lying on the north bank of the Sutlej, between $30^{\circ} 58'$ and $31^{\circ} 17'$ N. and $75^{\circ} 47'$ and $76^{\circ} 16'$ E., with an area of 304 square miles. The population in 1901 was 196,339, compared with 205,625 in 1891. The head-quarters are at the town of NAWĀSHAHR (population, 5,641); and it also contains the towns of RĀHON (8,651) and BANGA (4,697), with 274 villages. The land revenue and cesses amounted in 1903-4 to 4.4 lakhs. The Sutlej forms the southern boundary of the *tahsil*, and the low-lying tract along the river has an average breadth of 4 miles. The upland plateau above the old high bank is an almost unbroken plain with a stiff loam soil.

Phillaur Tahsil.—*Tahsil* of Jullundur District, Punjab, lying on the north bank of the Sutlej, between $30^{\circ} 57'$ and $31^{\circ} 13'$ N. and $75^{\circ} 31'$ and $75^{\circ} 58'$ E., with an area of 291 square miles. The population in 1901 was 192,860, compared with 189,578 in 1891. The head-quarters are at the town of PHILLAUR (population, 6,986); and it also contains the towns of NŪRMAHAL (8,706) and JANDIĀLA (6,620), with 222 villages. The land revenue and cesses amounted in 1903-4 to 4.2 lakhs. The Sutlej forms the southern boundary of the *tahsil*, and along the right bank is a narrow strip of low-lying alluvial land about $1\frac{1}{2}$ miles in width. The uplands which form the greater part of the *tahsil* are an unbroken plain with a loam soil.

Nakodar Tahsil.—Western *tahsil* of Jullundur District, Punjab, lying on the north bank of the Sutlej, between $30^{\circ} 56'$ and $31^{\circ} 15'$ N. and $75^{\circ} 5'$ and $75^{\circ} 37'$ E., with an area of 371 square miles. The population in 1901 was 222,412, compared with 217,079 in 1891. The head-quarters are at the town of NAKODAR (population, 9,958), and it also contains 311 villages. The land revenue and cesses amounted in 1903-4 to 4.3 lakhs. The Sutlej forms the southern boundary

of the *tahsil*. The alluvial lowlands along the right bank average 7 miles in breadth. The soil of the uplands above the old bank of the river is a light loam, and low sand ridges are not uncommon. The Eastern Bein passes through the *tahsil*.

Alāwalpur.—Town in the *tahsil* and District of Jullundur, Punjab, situated in $31^{\circ} 26'$ N. and $75^{\circ} 40'$ E. The chief trade is in *sūst* and *gabrūn* cloth, and in agricultural produce. Population (1901), 4,423. The municipality was created in 1867. The income during the ten years ending 1902-3 averaged Rs. 2,300, and the expenditure Rs. 2,400. In 1903-4 the income was Rs. 2,100, chiefly from octroi; and the expenditure was Rs. 2,200. The municipality maintains a vernacular middle school.

Banga.—Town in the Nawāshahr *tahsil* of Jullundur District, Punjab, situated in $31^{\circ} 11'$ N. and $76^{\circ} 0'$ E. Population (1901), 4,697. The principal trade is in sugar, manufactures of brass-ware, and carpenter's work. The municipality was created in 1867. The income during the ten years ending 1902-3 averaged Rs. 5,900, and the expenditure Rs. 5,700. In 1903-4 the income was Rs. 8,000, chiefly from octroi; and the expenditure was Rs. 7,200. The town possesses a vernacular middle school maintained by the municipality, and a Government dispensary.

Jandiāla.—Town in the Phillaur *tahsil* of Jullundur District, Punjab, situated in $31^{\circ} 34'$ N. and $75^{\circ} 37'$ E. Population (1901), 6,620. It ceased to be a municipality in 1872.

Jullundur Town (Jalandhar).—Head-quarters of the Division and District of Jullundur, Punjab, situated in $31^{\circ} 20'$ N. and $75^{\circ} 35'$ E., on the North-Western Railway and grand trunk road. It is distant by rail from Calcutta 1,180 miles, from Bombay 1,247 miles, and from Karāchi 916 miles. Population (1901), including cantonments, 67,735, of whom 24,715 were Hīndus, 40,081 Muhammadans, 901 Sikhs, and 1,543 Christians. Jullundur was, when visited by Hiuen Tsiang, a large city, 2 miles in circuit, the capital of a Rājput kingdom. It was taken by Ibrāhīm Shāh of Ghor about 1088. Under the Mughals Jullundur was the capital of a *sarkār*; it was burnt by the Sikhs in 1757, and captured by the Faizullahpuria confederacy in 1766. Ranjit Singh annexed it in 1811, and in 1846 Jullundur became the head-quarters of the territory acquired by the British after the first Sikh War. The town is surrounded by several suburbs known as *bastis*, the most important of which are Basti Dānishmandān (population, 2,770) and Basti Shaikh Darwesh (7,109), founded by Ansāri Shaikhs from Kāniguram in the seventeenth century.

lished here after the first Sikh War was abolished in 1854. Nakodar contains two fine tombs dated 1612 and 1637. It has a considerable trade in agricultural produce, and *hukka* tubes and iron jars are manufactured. The municipality was created in 1867. The income during the ten years ending 1902-3 averaged Rs. 9,100, and the expenditure Rs. 8,800. In 1903-4 the income was Rs. 9,300, chiefly from octroi; and the expenditure was Rs. 10,100. The town has an Anglo-vernacular middle school, maintained by the municipality, and a Government dispensary.

Nawāshahr Town.—Head-quarters of the *tahsil* of the same name, Jullundur District, Punjab, situated in $31^{\circ} 8' N.$ and $76^{\circ} 7' E.$ Population (1901), 5,641. A stronghold of the Sikh chief, Tārā Singh, Ghaiba, it was annexed after his death by Ranjit Singh. It is of no commercial importance. The municipality was created in 1867. The income during the ten years ending 1902-3 averaged Rs. 4,600, and the expenditure Rs. 4,700. In 1903-4 the income was Rs. 4,800, chiefly from octroi; and the expenditure was Rs. 5,300. The municipality maintains an Anglo-vernacular middle school.

Nūrmahal.—Town in the Phillaur *tahsil* of Jullundur District, Punjab, situated in $31^{\circ} 6' N.$ and $75^{\circ} 36' E.$ Population (1901), 8,706. It lay on the old imperial road from Delhi to Lahore and was refounded by Nūr Jahān, wife of Jahāngir. A large *sarai* was built by her orders, the west gateway of which is still in good preservation. The town has some manufacture of *gabrūn* cloth. The municipality was created in 1867. The income and expenditure during the ten years ending 1902-3 averaged Rs. 6,300. In 1903-4 the income was Rs. 6,100, chiefly from octroi; and the expenditure was Rs. 5,900. The town possesses a vernacular middle school, maintained by the municipality, and a Government dispensary.

Phillaur Town.—Head-quarters of the *tahsil* of the same name, Jullundur District, Punjab, situated in $31^{\circ} 1' N.$ and $75^{\circ} 48' E.$, on the north bank of the Sutlej, on the North-Western Railway and grand trunk road. Population (1901), 6,986. The town was founded by Shāh Jahān, who built a royal *sarai* here, converted by Ranjit Singh into a fort in consequence of the British occupation of Ludhiāna. A cantonment was established here after the first Sikh War, but the native troops mutinied in 1857 and it was not reoccupied. The fort was made over in 1891 to the Police department, and is now occupied by the Police Training School and the central bureau of the Criminal Identification department. The chief

commercial importance of the place is as a timber market. Its only manufacture is that of cotton cloth. The Sutlej is crossed here by a railway bridge 5,193 feet long, completed in 1870. There is no foot-bridge, but ferry trains are run at frequent intervals. The municipality was created in 1867. The income and expenditure during the ten years ending 1902-3 averaged Rs. 9,400. In 1903-4 the income was Rs. 11,000, chiefly from octroi; and the expenditure was Rs. 11,000. The town has an Anglo-vernacular middle school, maintained by the municipality, and a Government dispensary.

Rāhon.—Town in the Nawāshahr *tahsil* of Jullundur District, Punjab, situated in $31^{\circ} 4' N.$ and $76^{\circ} 8' E.$ Population (1901), 8,651. It is said to have been founded before the Christian era by one Rājā Raghav, who gave it the name of Raghūpur, which is still used by Hindu scholars. It was captured by the Ghorewāha Rājputs in the time of Muhammad of Ghor, whose leader renamed it Rāhon after a lady called Rāho. It is still considered unlucky to use the name Rāhon before breakfast; till then it is called Zanāna Shahr or 'woman town.' It was seized by the Sikh chief Tārā Singh, Ghaiba, in 1759, and annexed on his death by Ranjit Singh. The chief manufactures are imitation gold and silver braid and cotton cloth, and there is a considerable trade in sugar. The municipality was created in 1867. The income and expenditure during the ten years ending 1902-3 averaged Rs. 11,200. In 1903-4 the income was Rs. 10,500, chiefly from octroi; and the expenditure was Rs. 10,700. The town possesses an Anglo-vernacular middle school, maintained by the municipality, and a Government dispensary.

Boun-
daries, con-
figuration,
and hill
and river
systems.

Ludhiāna District.—District in the Jullundur Division of the Punjab, lying between $30^{\circ} 34'$ and $31^{\circ} 1' N.$ and $75^{\circ} 22'$ and $76^{\circ} 24' E.$, with an area of 1,455 square miles. It is bounded on the north by the Sutlej, which separates it from the District of Jullundur; on the east by Ambāla District and the Patialā State; on the south by the territories of the chiefs of Patialā, Nābha, and Māler Kotla; and on the west by the District of Ferozepore. In the south several of its outlying villages are scattered among the States of Patialā, Jind, Nābha, and Māler Kotla; while, on the other hand, in the east two or three groups of Patialā villages lie within its territory. It is divided into two portions by the high bank which marks the ancient bed of the Sutlej. At its foot lies a half-deserted watercourse, called the Budha nullah, still full in all but the driest seasons, and once the main channel of the Sutlej. The principal

stream of that river now runs farther north, leaving a broad alluvial strip, 2 to 6 miles in width, between its ancient and its modern beds. This strip, known as the Bet, forms the wider channel of the river, and is partly inundated after heavy rain. It is intersected in every direction by minor watercourses or nullahs, and, being composed of recent alluvium, is for the most part very fertile, but its eastern extremity has been injuriously affected by percolation from the Sirhind Canal. The uplands to the south of the high bank consist of a level plain, sloping gently to the south-west and broken only by some lines of sandhills which are very common in the Jangal, the south-western portion of the uplands; this tract is traversed throughout by the Sirhind Canal.

There is nothing of geological interest in the District, which is situated entirely in the alluvium. It includes the extreme north-west corner of the Upper Gangetic plain, but to the south-west it approximates to the desert region. Trees are few, unless where planted; but the *rerū* (*Acacia leucophloea*) is locally frequent, and the *kikar* (*Acacia arabica*), which is perhaps not aboriginal, is plentiful. The *ber* (*Zizyphus Jujuba*) is common in gardens and near homesteads. Geology and botany.

Wolves are not uncommon. *Nilgai*, antelope, and 'ravine deer' (Indian gazelle) are found throughout the southern part of the District, and hog in the rank grass near the Sutlej and Budha nullah. Fauna.

The heat in May and June is intense, but no worse than in most parts of the Punjab plains. During the monsoon the air is damp and the climate relaxing, except in the Jangal with its dry climate and pure water; and this tract is free from the outbreaks of autumnal fever, which sometimes occur after heavy rains in September. The Bet is peculiarly liable to these epidemics, and enlarged spleen and anaemia due to malarial poisoning are there common. Climate and temperature.

The rainfall is normal for the Punjab plains, ranging from 29 inches per annum at Samrāla to 22 at Jagraon. Rainfall.

The early history of the District is obscure. SUNET, near Ludhiāna, MĀCHHĪWĀRA, and Tihāra are all places of some antiquity, dating from the pre-Muhammadan period. The last, which lies in the north-west corner of the District, is identified by tradition with the Vairāta of the Mahābhārata, and was a place of some importance; but the ancient site has long been washed away by the Sutlej. The town of LUDHIĀNA dates only from the Lodi period, and the principality of RAIKOR originated in a grant of the Saiyid kings of Delhi. Under History and archaeology.

Akbar the tract formed a part of the *sarkār* of Sirhind, but the later Mughals leased the western part of the present District to the Rais of Raikot. Early in the eighteenth century they became semi-independent; and though the imperial forces successfully withstood Ahmad Shāh near Khanna in 1747, his subsequent invasions so weakened the Mughal power that the Rais were suffered to take possession of Ludhiāna town in 1760. Meanwhile the Sikhs had become a political power, especially on the south and south-west borders of the District; and after their capture of Sirhind the Samrāla *tahsil* fell into the hands of Sikh leaders, while the Rais retained most of the Ludhiāna and Jagraon *tahsils*. In 1798 the Rai, a minor, was attacked by the Sikhs under Bedi Sāhib Singh of Una, who invested Ludhiāna, but raised the siege when the Rai called in George Thomas. Finally, in 1806, Ranjīt Singh crossed the Sutlej on his first expedition against the cis-Sutlej chiefs, and stripped the Rais of their possessions, leaving a couple of villages for the maintenance of two widows, who were the only remaining representatives of the ruling family.

In 1809, after Ranjīt Singh's third invasion, a treaty was concluded between him and the British Government, by which his further conquests were stopped, although he was allowed to retain all territories acquired in his first two expeditions. At the same time, all the CIS-SUTLEJ STATES that had not been absorbed were taken under British protection. In the same year (1809) a cantonment for British troops was placed at Ludhiāna, compensation being made to the Rājā of Jind, in whose possession it then was. In 1835, on the failure of the direct line of the Jind family, a tract of country round Ludhiāna came into British possession by lapse, and this formed the nucleus of the present District.

On the outbreak of the first Sikh War, Ludhiāna was left with a small garrison insufficient to prevent part of the cantonments being burnt by the chief of Lādwā or to oppose the passage of the Sutlej by Ranjodh Singh. Sir Harry Smith threw some 4,000 men into the place, after losing nearly all his baggage at the action of Baddowāl. This reverse was, however, retrieved by the battle fought at ALIWĀL, close to the Sutlej, in which Ranjodh Singh was driven across the river, and the upper Sutlej cleared of the enemy.

On the conclusion of the first Sikh War in 1846, the District assumed very nearly its present limits, by the addition of territory annexed from the Lahore government and its adherents south of the Sutlej. Since the British occupation, the town of

Hindus number 269,076, or 40 per cent. of the population; Muhammadans, 235,937, or 35 per cent.; and Sikhs, 164,919, or 24 per cent. The language of the District is Punjabi.

Castes and
occupa-
tions.

The tribes and castes are distinguished by no local peculiarities. Jats or Jāts number 235,000, or 35 per cent. of the total, 132,000 being Sikhs and 77,000 Hindus. If the Jats are the best peasantry in India, the Jats of the MĀLWĀ (i.e. those of Ferozepore and Ludhiāna) possess in a greater degree than any other branch of the tribe the qualities which have earned for them this distinction. They have a finer physique, and as farmers are more prudent and thrifty, than their brethren in Lahore and Amritsar. The Rājputs (29,000) are undoubtedly the oldest of the agricultural tribes now found in the District. They are almost all Muhammadans, and present a striking contrast to the Sikh and Hindu Jats, being indolent and thriftless cultivators. The Gūjars (33,000) are mainly Muhammadans, behind the Jats in general ability, and as a tribe turbulent, lawless, and discontented. Lastly come the Arains (32,000), who are invariably Muhammadans, excelling as market-gardeners and making more than any one else out of a small plot of land, but incapable of managing large areas. The religious castes include Brāhmans (25,000), who generally live on the Jats of the uplands, and the Muhammadan Madāris (6,000). About 17,000 persons (including the Madāris) are classed as Fakirs. The Sūds (200) deserve mention, as Ludhiāna is considered the head-quarters of their tribe. They are intelligent, and take readily to clerical service under Government. Among the artisan and menial castes may be mentioned the Chamārs (leather-workers), 63,000; Chūhrās (scavengers), 22,000; Jhīnwars (water-carriers), 18,000; Kumhārs (potters), 10,000; Lohārs (blacksmiths), 9,000; Julāhās (weavers), 17,000; Mochīs (cobblers), 9,000; Nais (barbers), 12,000; Sonārs (goldsmiths), 7,000; Tarkhāns (carpenters), 21,000; and Telis (oil-pressers), 14,000. About 55 per cent. of the total population are returned as agricultural.

Christian
missions.

Ludhiāna is the chief station in India of the American Presbyterian Mission. Founded here in 1834, the Mission has established many branches throughout the Punjab and United Provinces, and maintains a large number of dispensaries and schools, among which the Forman Christian College at LAHORE is the best known. In 1901 the District contained 415 native Christians.

General
agricul-

The soil of the Sutlej riverain is a stiff moist loam, constantly fertilized in the immediate neighbourhood of the river

by the silt deposited by it. In the uplands south of the high bank every variety of soil is found, from stiff clay to the lightest of sand, the lighter soils prevailing along the high bank and to the south-west of the District, while those of the eastern parts are much stiffer. Where there is no irrigation, the light sandy loam is the safest soil: although with copious rain its yield is much less than that of the stiffer soils, it is far more able to resist drought.

The District is held almost entirely by communities of peasant proprietors, estates held by large landowners covering only about 24 square miles.

The area for which details are available from the revenue records of 1903-4 is 1,394 square miles, as shown below:—

<i>Tahsil.</i>	Total.	Cultivated.	Irrigated.	Cultivable waste.
Ludhiāna . . .	685	572	148	57
Samrāla . . .	291	245	90	19
Jagraon . . .	418	376	71	17
Total	1,394	1,193	309	93

The principal crops of the spring harvest are wheat and gram, the areas under which were 364 and 285 square miles in 1903-4. Barley covered 32 square miles and rapeseed 35 square miles. Maize is the chief crop of the autumn harvest with 115 square miles; pulses covered 145 square miles, great millet 47 square miles, and spiked millet 4,110 acres. Sugar-cane covered only 18 square miles, but it is the most valuable autumn crop.

During the twenty years ending 1901 the cultivated area increased by more than 30,000 acres, the increase being chiefly due to the construction of the SIRHIND CANAL. As no more canal water can be spared for this District, the cultivated area, which now amounts to more than four-fifths of the total, is not likely to increase much farther. Loans under the Land Improvement Loans Act are not very popular, about Rs. 2,000 having been advanced during the five years ending 1904.

Ludhiāna is not a great cattle-breeding District, owing to the small area available for grazing, and a large proportion of the cattle are imported from the breeding tracts to the south. The horses of the Jangal tract, in which part of the Jagraon *tahsil* lies, are a famous breed descended from Arab stallions kept at Bhatinda by the Mughal emperors. The District board maintains 4 horse and 11 donkey stallions. Sheep and goats are kept in almost every village, and camels in the Jangal tract.

tural conditions.

Chief agricultural statistics and principal crops.

Improvements in agricultural practice.

Cattle, horses, sheep, &c.

There is a large export of wheat to Karāchi, and of rapeseed, oil, maize, millets, and pulses to the United Provinces and Bengal; woollen and cotton goods are exported all over India. The chief imports are piece-goods, cotton yarn, sugar from the Jullundur Doāb, and iron, salt, brass and copper vessels, and barley and inferior grains from the Native States to the south.

The main line of the North-Western Railway passes through Ludhiāna town, from which place the Ludhiāna-Dhūri-Jākhal Railway (also broad gauge) runs to Dhūri on the Rājputra-Bhatinda line and Jākhal on the Southern Punjab Railway. A line connecting Ludhiāna with Ferozepore, Fāzilka, and M'Leodganj on the Southern Punjab Railway has recently been opened. The grand trunk road passes through the District by the side of the main line of railway, and an important metalled road runs from Ludhiāna town via Ferozepore to Lahore. The total length of metalled roads is 165 miles and of unmetalled roads 207 miles; of the former, 75 miles are under the Public Works department and the rest under the District board. The main line and Abohar branches of the SIRHIND CANAL are navigable, as is the Sutlej during the rains. The Sutlej is crossed by twelve ferries.

The District suffered, like the rest of the country, in the *chālīsa* famine of 1783, and famines occurred in 1813 and 1833. In 1861 and 1869 there was considerable scarcity, and Rs. 6,000 and Rs. 7,000 respectively was spent on famine relief. Ludhiāna was unaffected by the scarcity of 1878. The opening of the Sirhind Canal has made the District secure against drought, and food-grains were exported during the famines of 1897 and 1900. The area of crops matured in the famine year 1899-1900 amounted to 72 per cent. of the normal.

The District is in charge of a Deputy-Commissioner, aided by four Assistant or Extra Assistant Commissioners, of whom one is in charge of the District treasury. It is divided into the *tahsils* of LUDHIĀNA, SAMRĀLA, and JAGRAON, each under a *tahsildār* assisted by a *naiib-tahsildār*.

The Deputy-Commissioner as District Magistrate is responsible for criminal justice. The civil judicial work is under a District Judge, subordinate to the Divisional Judge of the Ambāla Civil Division, who is also Sessions Judge. There are four Munsifs, two at head-quarters and one at each outlying *tahsil*. There are nine honorary magistrates. The crime of the District presents no features of special interest.

Under Akbar the District formed part of the Sirhind division

revenue
adminis-
tration.

or *sarkār*. The revenue system was elaborate, being based on uniform measurements of the land and a careful classification of soils. Produce estimates were made, and the Government share fixed at one-third of the gross out-turn. Under Akbar's successors, and still more under the Sikhs, revenue assessment degenerated into a system of direct or vicarious extortion. The government, when it was strong enough, and its lessees when it was not, were restrained in their exactions only by the fear of losing their cultivators altogether. A summary assessment was made in 1847-9, a reduction varying from 3 to 6 annas in the rupee being allowed on the existing demand. The regular settlement further reduced the demand by 11 per cent., the amount fixed in 1850 being 9.3 lakhs. This assessment worked well. Despite two periods of scarcity the revenue was punctually paid, and in no case were coercive measures found necessary. Transfers of land were few and credit remained generally good. The current settlement, carried out in 1879-83, was based on an estimated rise since 1860 of 50 per cent. in prices, and an increase of 8 per cent. in cultivation; but the proportion of the 'assets' taken was one-half instead of two-thirds, and the enhancement amounted to 18 per cent. The revenue rates average Rs. 2-7-0 (maximum, Rs. 4; minimum, Rs. 1-6-0) on irrigated land, and Rs. 1-9-0 (maximum, Rs. 2-10-0; minimum, 8 annas) on unirrigated. The demand for the first year was 10.9 lakhs, including 1.6 lakhs *jāgīr* revenue; and in 1903-4, including cesses, amounted to over 12.4 lakhs. The average size of a holding cultivated by an owner is 3.2 acres, by an occupancy tenant 1.9, and by a tenant-at-will 1.6 acres.

The collections of land revenue alone and of total revenue are shown below, in thousands of rupees :—

	1880-1.	1890-1.	1900-1.	1903-4.
Land revenue . . .	7,96	9,24	9,33	9,50
Total revenue . . .	10,21	12,43	14,40	14,40

Local and
municipal.

The District contains five municipalities: LUDHIĀNA, JAGRAON, KHANNA, RAIKOT, and MĀCHHĪWĀRA. Outside these, local affairs are managed by a District board, whose income in 1903-4 was Rs. 1,35,000, and expenditure Rs. 1,47,000. Education is the principal item of local expenditure.

Police and
jails.

The regular police force consists of 508 of all ranks, including 117 municipal police, under a Superintendent, who usually has three inspectors to assist him. The village watchmen number

Samrāla Tahsil.—*Tahsil* of Ludhiāna District, Punjab, lying on the south bank of the Sutlej, between $30^{\circ} 37'$ and $30^{\circ} 59'$ N. and $76^{\circ} 2'$ and $76^{\circ} 24'$ E., with an area of 291 square miles. The population in 1901 was 154,995, compared with 158,770 in 1891. It contains the two towns of KHANNA (population, 3,838) and MĀCHHĪWĀRA (5,588), and 263 villages, among which is Samrāla, the head-quarters. The land revenue and cesses amounted in 1903-4 to 3.5 lakhs.

Jagraon Tahsil.—*Tahsil* of Ludhiāna District, Punjab, lying on the south bank of the Sutlej, between $30^{\circ} 35'$ and $30^{\circ} 59'$ N. and $75^{\circ} 22'$ and $75^{\circ} 47'$ E., with an area of 418 square miles. It is bounded on the east and south by Patiala and Māler Kotla States. The population in 1901 was 184,765, compared with 166,252 in 1891. It contains the two towns of JAGRAON (population, 18,760), the head-quarters, and RAIKOT (10,131); and 169 villages. The land revenue and cesses amounted in 1903-4 to 3.3 lakhs. It is divided into the Bet or Sutlej lowlands, and the Dhaia or upland plain, irrigated by the Abohar branch of the Sirhind Canal. The battle-field of ALIWĀL is in this *tahsil*.

Aliwāl.—Village in the Jagraon *tahsil* of Ludhiāna District, Punjab, situated in $30^{\circ} 56'$ N. and $75^{\circ} 38'$ E., the scene of the battle fought by Sir Harry Smith on January 28, 1846, against the Sikhs. The Sikh force, which amounted to about 15,000 men, was posted in the lowlands close to the Sutlej, with the right resting on the village of Bhundri on the high bank, and the left on Aliwāl close to the river. East of Bhundri the high bank or ridge, which separates the valley of the Sutlej from the uplands, sweeps inwards in a semicircle to the distance of 5 or 6 miles, crowned with villages at intervals, and leaving a wide open plain between it and the river. It was across this plain that the British army on the morning of January 28 moved to the attack, the capture of the village of Aliwāl, the key of the position, being the first object. The Sikh guns were as usual well served; but Aliwāl was in the hands of inferior troops and the resistance was spiritless. By the capture of the village the Sikh left was turned; but round Bhundri their right, composed of trained and enthusiastic Khālsa troops, made a most determined stand, and the whole battle is still called by natives the fight of Bhundri. The most gallant part of the action was the charge by the 16th Lancers of the unbroken Sikh infantry, who received them in square. Three times the Sikhs were ridden over, but they reformed at once on each occasion; and it was not till the whole strength of

the British was brought to bear on them that they were at length compelled to turn their backs. The Sikh troops were either driven across the river, in which many of them were drowned, or dispersed themselves over the uplands. The British loss was considerable, amounting to 400 men killed and wounded. A tall monument, erected in the centre of the plain to the memory of those who fell, marks the scene of the action.

Bahlolpur (*Bhilolpur*).—Village in the Samrāla *tahsil* of Ludhiāna District, Punjab, situated in $30^{\circ} 55' N.$ and $76^{\circ} 22' E.$ Population (1901), 2,194. It was founded in the reign of the emperor Akbar by two Afghāns, Bahlol Khān and Bahādur Khān, whose descendants still live here. It is now of no importance. Three tombs, said to date from the time of Akbar, stand on the west side of the village.

Jagraon Town.—Head-quarters of the *tahsil* of the same name in Ludhiāna District, Punjab, situated in $30^{\circ} 47' N.$ and $75^{\circ} 28' E.$, 26 miles from Ludhiāna town. Population (1901), 18,760. There is a considerable trade in wheat and sugar, and a local industry in ivory-carving, billiard-balls being turned. The municipality was created in 1867. The income during the ten years ending 1902-3 averaged Rs. 18,200, and the expenditure Rs. 15,600. In 1903-4 the income was Rs. 19,500, chiefly derived from octroi; and the expenditure was Rs. 25,000. The town has a Government dispensary, and the municipality maintains an Anglo-vernacular middle school.

Khanna.—Town in the Samrāla *tahsil* of Ludhiāna District, Punjab, situated in $30^{\circ} 42' N.$ and $76^{\circ} 13' E.$, on the North-Western Railway, 27 miles from Ludhiāna town. Population (1901), 3,838. The town possesses two cotton-ginning factories, with a flour-mill attached to one of them. The number of employés in the factories in 1904 was 145, and in the mill 30. Khanna is a *dépôt* for the agricultural produce of the neighbourhood. It contains an Anglo-Sanskrit middle school (unaided) and a Government dispensary. The municipality was created in 1875. The income during the ten years ending 1902-3 averaged Rs. 6,400, and the expenditure Rs. 6,100. In 1903-4 the income was Rs. 6,600, chiefly derived from octroi; and the expenditure was Rs. 5,900.

Ludhiāna Town.—Head-quarters of the District and *tahsil* of Ludhiāna, Punjab, situated in $30^{\circ} 56' N.$ and $75^{\circ} 52' E.$, on the grand trunk road. It is the junction of the North-Western, Ludhiāna-Dhūrt-Jākhāl, and the Ludhiāna-Ferozepore-M'Leod-ganj Railways; distant by rail from Calcutta 1,148 miles,

a printing press. There is a civil hospital in the town, with a branch dispensary.

Māchhiwāra.—Town in the Samrāla *tahsil* of Ludhiāna District, Punjab, situated in $30^{\circ} 55' N.$ and $76^{\circ} 12' E.$, 6 miles from Samrāla and 27 from Ludhiāna town. Population (1901), 5,588. It has a small sugar industry, and was the scene of Humāyūn's defeat of the Afghāns in 1555. The municipality was created in 1867. The income and expenditure during the ten years ending 1902-3 averaged Rs. 4,900. In 1903-4 the income was Rs. 4,200, chiefly derived from octroi; and the expenditure was Rs. 5,100. The town has a Government dispensary, and the municipality maintains a vernacular middle school.

Raikot (*Raekot*).—Town in the Jagraon *tahsil* of Ludhiāna District, Punjab, situated in $30^{\circ} 39' N.$ and $75^{\circ} 36' E.$, 27 miles from Ludhiāna town. Population (1901), 10,131. In the seventeenth century it was made the capital of the Rais of Raikot, whose palaces are still standing; but it declined rapidly after their overthrow, and is now of no commercial importance. The municipality was created in 1867. The income during the ten years ending 1902-3 averaged Rs. 6,800, and the expenditure Rs. 6,500. In 1903-4 the income was Rs. 7,700, chiefly derived from octroi; and the expenditure was Rs. 7,400. It possesses a vernacular high middle school maintained by the municipality, and a Government dispensary.

Sunet.—Ruins in the District and *tahsil* of Ludhiāna, Punjab, situated in $30^{\circ} 53' N.$ and $75^{\circ} 50' E.$, 3 miles south-west of Ludhiāna town. A large mound clearly marks the ancient site of an important city. Cunningham concludes from the coins here discovered that the town of Sunet must have been in existence before the Christian era, and that it continued to flourish during the whole period of the Indo-Scythians and of their successors who used Sassanian types, down to the time of Samanta Deva, the Brāhman king of Kābul or Ohind. On the other hand, from the absence of coins of the Tomar Rājās of Delhi and of the Muhammadan dynasties, it is inferred that Sunet was destroyed during the invasions of Mahmūd Ghazni, and never reoccupied.

[*Archaeological Survey Reports*, vol. xiv, p. 65.]

Ferozepore District (*Firozpur*).—District in the Jullundur Division of the Punjab, lying between $29^{\circ} 55'$ and $31^{\circ} 9' N.$ and $73^{\circ} 52'$ and $75^{\circ} 26' E.$, with an area of 4,302 square miles. On the north-east and north-west, the Sutlej forms the boundary separating the District from Jullundur and the Kapūrthala

Boun-
daries, con-
figuration,
and river
system.

State, and, after its confluence with the Beās, from the Districts of Lahore and Montgomery. On the south-west and south, it is bounded by the States of Bahāwalpur and Bikaner, and by Hissār District; on the south-east, by the Farīdkot State, and by detached pieces of territory belonging to Patialā and Nābha; and on the east by the District of Ludhiāna. Farīdkot State lies across the centre of the District, extending from the south-eastern border to within a few miles of the Sutlej on the north-west. A detached area forming a part of the Moga *tahsil* lies east of the Farīdkot State. The District consists of a flat, alluvial plain, divided into three broad plateaux by two broken and shelving banks which mark ancient courses of the Sutlej. The upper bank, which crosses the District about 35 miles east of the present stream, is from 15 to 20 feet high; and the river seems to have run beneath it until 350 or 400 years ago, when its junction with the Beās lay near Multān. In the second half of the eighteenth century the river ran under part of the lower bank and, in its changes from this to its present bed, has cut out two or three channels, now entirely dry, the most important of which, the Sukhar Nai, runs in a tortuous course east and west. The volume of water in the Sutlej has sensibly diminished since the opening of the Sirhind Canal, and during the cold season it is easily fordable everywhere above its confluence with the Beās; below the confluence the stream is about 1,000 yards wide in the cold season, swelling to 2 or 3 miles in time of flood. The country is well wooded in its northern half, but very bare in the south; it is absolutely without hill or eminence of any description, even rock and stone being unknown.

Geology
and
botany.

There is nothing of geological interest in the District, which is situated entirely on the alluvium. In the north the spontaneous vegetation is that of the Central Punjab, in the south that of the desert, while in the Fāzilka subdivision several species of the Western Punjab, more particularly saltworts yielding *sajji* (barilla), are abundant. Trees are rare, except where planted; but the *tālī* or *shisham* (*Dalbergia Sissoo*) is common on islands in the Sutlej. Along the banks of that river there are large brakes (locally called *belas*) of tall grasses (*Saccharum*, *Andropogon*, &c.) mixed with tamarisk, which are used for thatching, brush-making, and basket-weaving, also *mūnj* (used for cordage) and *khas-khas* (scented roots employed for screens, &c.).

Fauna.

Wolves are the only beasts of prey now found, and they are by no means common; but until the middle of the nineteenth century tigers were found on the banks of the Sutlej.

Hog abound, and 'ravine deer' (Indian gazelle) and antelope are fairly plentiful.

The climate does not differ from that of the Punjab plains generally, except that Ferozepore is proverbial for its dust-storms. Owing to the dryness of its climate, the city and cantonment of Ferozepore and the upland plains are exceptionally healthy; but the riverain tract is malarious in the extreme.

Climate and temperature.

The annual rainfall varies from 11 inches at Muktsar to 20 at Zira; of the rain at the latter place 17 inches fall in the summer months and 2 in the winter. The rainfall is very uncertain: the greatest amount received in any year between 1881 and 1903 was 25 inches at Ferozepore in 1882, and in four of the last twenty years one place or another has received absolutely no rain. An unusually heavy flood came down the Sutlej in August, 1900, and the level then rose 3 feet above the highest on record, a part of the town of Ferozepore being washed away.

Rainfall.

The earliest known rulers appear to have been the Ponwār Rājputs, one of whose capitals may have been Janer, a place apparently mentioned by Al Baihaki as Hajnūr on the route from Meerut to Lahore. About the time of the first Muhammadan invasions a colony of Bhatti Rājputs from Jaisalmer settled in the neighbourhood of Muktsar, and the Manj, a branch of them, ousted the Ponwārs and became converts to Islām about 1288. The great Jat tribes—Dhālīwāls, Gils, and others—which now people the District, began to appear 200 years after the Bhattis. About 1370 the fort of Ferozepore was built by Fīroz Shāh III, and included in his new government of Sirhind. Up to a comparatively recent date it seems probable, as tradition avers, that the District was richly cultivated, and deserted sites and ruined wells in the tract bordering on the older course of the Sutlej bear witness to the former presence of a numerous population. Though no date can be absolutely determined for this epoch of prosperity, there are some grounds for the belief that the Sutlej flowed east of Ferozepore fort in the time of Akbar; for the *Ain-i-Akbarī* describes it as the capital of a large tract attached to the province of Multān, and not to Sirhind, as would probably have been the case had the river then run in its modern course. The shifting of the river from which the tract derived its fertility, and the ravages of war, were doubtless the chief causes of its decline. This probably commenced before the end of the sixteenth century, and in another hundred years

History and archaeology.

the country presented the appearance of a desert. About the end of the sixteenth century the Sidhu Jats, from whom the Phūlkīān Rājās are descended, made their appearance; and in the middle of the seventeenth century most of the Jat tribes were converted to Sikhism by Har Rai, the seventh Gurū. In 1705 the tenth Gurū, Govind Singh, in his flight from Chamkaur, was defeated with great loss at Muktsar; in 1715 Nawāb Isa Khān, a Manj chief, who fifteen years before had built the fort of Kot Isa Khān, rebelled against the imperial authorities and was defeated and killed; and about the same time the Dogars, a wild, predatory clan which claims descent from the Chauhān Rājputs, settled near Pakpattan, and gradually spread up the Sutlej valley, finding none to oppose them, as the scattered Bhatti population which occupied it retired before the new colonists. At length, in 1740, according to tradition, they reached Ferozepore, which was then included in a district called the Lakha Jungle in charge of an imperial officer stationed at Kasūr. Three of these officials in succession were murdered by the Dogars, who seem to have had matters much their own way until the Sikh power arose.

In 1763 the Bhangī confederacy, one of the great Sikh sections, attacked and conquered Ferozepore under their famous leader, Gūjar Singh, who made over the newly acquired territory to his nephew, Gurbakhsh Singh. The young Sikh chieftain rebuilt the fort and consolidated his power on the Sutlej, but spent most of his time in other portions of the province. In 1792, when he seems to have divided his estates with his family, Ferozepore fell to Dhanna Singh, his second son. Attacked by the Dogars, by the Pathāns of Kasūr, and by the neighbouring principality of Raikot, the new ruler lost his territories piece by piece, but was still in possession of Ferozepore itself when Ranjit Singh crossed the Sutlej in 1808, and threatened to absorb all the minor principalities which lay between his domain and the British frontier. But the British Government, established at Delhi since 1803, intervened with an offer of protection to all the CIS-SUTLEJ STATES; and Dhanna Singh gladly availed himself of the promised aid, being one of the first chieftains who accepted British protection and control. Ranjit Singh, seeing the British ready to support their rights, at once ceased to interfere with the minor States, and Dhanna Singh retained unmolested the remnant of his dominions until his death in 1818. He left no son, but his widow succeeded to the principality during her lifetime; and

District, which on any show of weakness would have been in revolt from one end to the other. In 1884, when Sirsa District was broken up, the *tahsil* of Fāzilka was added to Ferozepore.

The
people.

The population of the District at the last three enumerations was: (1881) 747,329, (1891) 886,676, and (1901) 958,072, dwelling in 8 towns and 1,503 villages. It increased by 8 per cent. during the last decade, the increase being greatest in the Fāzilka *tahsil* and least in Zira. It is divided into the five *tahsils* of FEROEZPORE, ZIRA, MOGA, MUKTSAR, and FĀZILKA, the head-quarters of each being at the place from which it is named. The chief towns are the municipalities of FEROEZPORE, the head-quarters of the District, FĀZILKA, MUKTSAR, DHARMKOT, ZIRA, and MAKHU.

The following table shows the chief statistics of population in 1901:—

<i>Tahsil.</i>	Area in square miles.	Number of		Population.	Population per square mile.	Percentage of variation in population between 1891 and 1901.	Number of persons able to read and write.
		Towns.	Villages.				
Ferozepore	480	2	330	165,851	345.5	— 7.7	10,159
Zira	49 ⁸	3	342	176,462	354.3	+ 1.3	4,218
Moga	807	1	202	245,857	304.6	+ 4.3	11,378
Muktsar	937	1	320	172,445	184.0	+ 6.8	5,538
Fāzilka	1,355	1	319	197,457	145.7	+ 45.6	5,279
District total	4,352	8	1,503	958,072	222.7	+ 8.0	36,572

NOTE.—The figures for the areas of *tahsils* are taken from revenue returns. The total District area is that given in the *Census Report*.

Muhammadans number 447,615, or 47 per cent. of the total; Hindus, 279,099, or more than 29 per cent.; and Sikhs, 228,355, or nearly 24 per cent. The language generally spoken is Punjābi of the Mālwai type, but on the borders of Bikaner Bāgrī is spoken.

Castes and
occupations.

By far the largest tribe are the Jats or Jāts (248,000). They are of the Mālwa type, described under LUDHIĀNA DISTRICT. The Arains (65,000) appear to be recent immigrants from Jullundur and Lahore. Small to begin with, their holdings in this District have become so subdivided, and their recent extravagance has plunged them so heavily into debt, that they present a complete contrast to their brethren in Ludhiāna. Rājputs number 82,000. The Dogars (16,000) are still mainly a pastoral tribe; they are noted cattle-thieves, and have been described as feeble-minded, vain, careless, thriftless, very self-indulgent, and incapable of serious effort. Gūjars number

Wheat and gram are the most important crops of the spring harvest, occupying 784 and 841 square miles respectively in 1903-4; barley covered 213 square miles. In the autumn harvest, the great and spiked millets occupied 193 and 128 square miles respectively. Some rice (21 square miles) is grown on the inundation canals, and maize (117 square miles) in the riverain. The pulse *moth* is the autumn crop of the sandy tracts beneath the great bank. Little sugar-cane or cotton is grown.

Improvements in agricultural practice.

The cultivated area increased by 6 per cent. during the twelve years ending 1903-4, the increase being chiefly due to the extension of canal-irrigation. Little has been done towards improving the quality of the crops grown, and experiments tend to show that foreign seeds deteriorate after a year or two. The chief improvement in agricultural practice is the substitution of the spring cultivation for the less valuable autumn crops; forty years ago the autumn harvest occupied twice the area of the spring, and even now spring cultivation in the south of the District is insignificant. Loans under the Agriculturists' Loans Act are popular, and as a rule faithfully applied. During the five years ending 1904 Rs. 86,000 was advanced under this Act, and Rs. 1,600 under the Land Improvement Loans Act.

Cattle, horses, and sheep.

The cattle of the riverain are greatly inferior to the upland breed, which is an extremely fine one. Before the introduction of British rule, the jungles round Muktsar were inhabited by an essentially pastoral population. Camels are much used in the sandy parts and the local breed is good. Ferozepore is an important horse-breeding District. There are two breeds of horses—a small wiry animal bred chiefly by the Dogars of the riverain, and a larger one bred inland. An important horse and cattle fair is held at Jalālābād in the Mamdot estate in February. Nine horse and eighteen donkey stallions are kept by the Army Remount department, and two pony stallions by the District board. Sheep are fairly numerous, and the wool of the country between Fāzilka and Bikaner is much esteemed.

Irrigation.

Of the total area cultivated in 1903-4, 1,611 square miles, or 47 per cent., were classed as irrigated. Of this area, 170 square miles were irrigated from wells, 79 from wells and canals, 1,361 from canals, and 519 acres from streams and tanks. In addition, 68 square miles, or 2 per cent., were subject to inundation from the Sutlej. The high lands of the south-east are irrigated by the Abohar branch of the Sirhind

Canal, while the riverain is watered by the Grey Inundation Canals. In the riverain wells are worked by Persian wheels, in the high lands by the rope and bucket. In both cases bullocks are used. There were 8,604 wells in use in 1904, besides 808 temporary wells, lever wells, and water-lifts.

Forests covering an area of 6 square miles are managed by the Deputy-Commissioner. Small groves of trees are generally found round wells; but there are no large plantations, and the scarcity of wood is felt to a considerable extent. *Kankar* is the only mineral product of value.

The manufactures are confined almost entirely to the supply of local wants. Coarse cloths and blankets are woven from home-grown cotton and wool, and the carts made locally are of exceptional excellence. Mats are woven of Indian hemp and false hemp. Excellent lacquer-work on wood is produced. The arsenal at Ferozepore employed 1,199 hands in 1904.

The District exports wheat and other articles of agricultural produce, which are to a great extent carried by the producers direct to markets in Ludhiāna, Amritsar, Bahāwalpur, Lahore, Jullundur, and Hoshiārpur. The chief imports are sugar, cotton, sesamum, metals, piece-goods, indigo, tobacco, salt, rice, and spices. Ferozepore town is the chief trade centre.

Ferozepore town lies on the North-Western Railway from Lahore to Bhatinda, and the *Fāzilka takhl* is traversed by the Southern Punjab Railway. Fāzilka town is also connected with Bhatinda by a branch of the Rājputāna-Mālwa (narrow gauge) Railway, which runs parallel to the North-Western Railway from Bhatinda to Kot Kapūra. A railway running from Ludhiāna through Ferozepore and Fāzilka to join the Southern Punjab Railway at M'Leodganj has recently been opened. Ferozepore town lies on the important metalled road from Lahore to Ludhiāna. The total length of metalled roads in the District is 81 miles and of unmetalled roads 828 miles. Of the former, 57 miles are under the Public Works department, and the rest under the District board. The Abohar branch of the Sirhind Canal and the Sutlej Navigation Canal form a waterway connecting Ferozepore town with Rūpar. Below its junction with the Beās, the Sutlej is navigable all the year round. Little use, however, is made of these means of water communication. There are twenty ferries on the Sutlej.

The District was visited by famine in 1759-60, and again in 1783-4, the year of the terrible *chālīsa* famine, when rain failed for three successive seasons and wheat sold at a secr

and a quarter per rupee. Famine again occurred in 1803-4, 1817-8, 1833-4, 1842-3, 1848-9, 1856-7, and 1860-1. In 1868-9 there was famine, and Rs. 16,739 was spent in relief. The next famine was in 1896-7, by which time the extension of canal-irrigation and the improvement of communications had to a great extent prevented distress becoming really acute. Food for human beings was not scarce, as the stocks of grain were ample, but a good deal of suffering was caused by high prices. The total amount spent on relief was Rs. 33,952, and the greatest number relieved in any week was 4,149. In 1899-1900 scarcity was again felt. The greatest number on test works was 2,296, and the expenditure was Rs. 75,470, of which Rs. 61,435 was for works of permanent utility on canals.

District
subdivi-
sions and
staff.

The District is in charge of a Deputy-Commissioner, aided by six Assistant or Extra Assistant Commissioners, of whom one is in charge of the Fāzilka subdivision and one in charge of the District treasury. It is divided into the five *tahsils* of Ferozepore, Zira, Moga, Muktsar, and Fāzilka, each under a *tahsildār* and a *naib-tahsildār*, the Fāzilka *tahsil* forming a subdivision.

Civil
justice and
crime.

The Deputy-Commissioner as District Magistrate is responsible for criminal justice. Civil judicial work is under a District Judge, and both officers are subordinate to the Divisional Judge of the Ferozepore Civil Division, who is also Sessions Judge. There are four Munsifs, one at head-quarters and one at each outlying *tahsil*, except Fāzilka. Dacoity and murder are especially common in the District. The most frequent forms of crime are cattle-theft and burglary.

Land
revenue
adminis-
tration.

Practically nothing is known of the revenue systems which obtained in Ferozepore previous to annexation. The *Ain-i-Akbari* mentions Ferozepore as the capital of a large *pargana* in the Multān *Sūbah*. The Lahore and Kapūrthala governments seem to have taken their revenue in cash. They fixed the amount for short periods only, and sometimes collected in kind. From annexation onwards the revenue history has to be considered in three parts. The District proper is divided into two portions by the State of Farīdkot, while the revenue history of the Fāzilka *tahsil*, which was added to the District in 1884, is distinct from either of those portions and possesses different natural features. Several summary assessments were made from annexation to 1852, when the regular settlement was commenced. This assessment, which increased the demand of the summary settlement by only 1 per cent., was sanctioned for a term of thirty years. The Muktsar *tahsil* was

annexed in 1855 and settled summarily. This settlement ran on till 1868, when (together with the Mamdot territory annexed in 1864) the *tahsil* was regularly settled. The northern part of the District, including the Moga, Zira, and Ferozepore *tahsils*, was resettled between 1884 and 1888. Besides raising the demand from Rs. 4,80,000 to Rs. 7,30,000, a water rate was imposed of 6 and 12 annas per *ghumao* (five-sixths of an acre) on crops irrigated by the Grey Inundation Canals. This rate brings in about Rs. 30,000 a year. The Muktsar *tahsil* was reassessed immediately afterwards, and the revenue raised from Rs. 1,76,000 to Rs. 2,65,000, excluding the canal rate, which was calculated to bring in a further Rs. 20,000.

The Fāzilka *tahsil* was summarily settled after annexation, and the regular settlement was made in 1852-64. The revised settlement made in 1881 increased the revenue from Rs. 55,000 to Rs. 94,000. At the same time 51 villages on the Sutlej were placed under a fluctuating assessment, based on crop rates varying from Rs. 1-8-0 to 8 annas per acre. The *tahsil* came again under assessment in February, 1900, when the revenue was increased by Rs. 71,000, excluding a large enhancement of occupiers' rates on canal-irrigated lands.

The rates of the present settlement range from R. 0-14-3 to Rs. 1-6-3 on 'wet' land, and from 7 annas to R. 0-13-10 on 'dry' land.

The collections of land revenue alone and of total revenue are shown below, in thousands of rupees :—

	1880-1.	1890-1.	1900-1.	1903-4.
Land revenue . . .	5.19*	8.71	9.01	11.04
Total revenue . . .	7.34*	12.97	15.13	17.78

* For the District as then constituted, excluding the Fāzilka *tahsil*.

The District possesses six municipalities: FEROREZEPORE, Local and FĀZILKA, MUKTSAR, DHARMKOT, ZĪRA, and MAKHU. Outside municipal. these, local affairs are managed by the District board, which had in 1903-4 an income of Rs. 1,73,000. The expenditure was Rs. 1,61,000, public works being the largest item.

The regular police force consists of 679 of all ranks, including Police and 59 cantonment and 91 municipal police, under a Superintendent jails. who usually has four inspectors to assist him. The village and town watchmen number 1,528. There are 18 police stations, 4 outposts, and 13 road-posts. The District jail at headquarters has accommodation for 424 prisoners.

an upland plateau of sandy loam. The population in 1901 was 165,851, compared with 179,606 in 1891. FEROZEPORE (population, 49,341) is the *tahsil* head-quarters. It also contains the town of MUDKĪ (2,977) and 320 villages. The land revenue and cesses amounted in 1903-4 to 2.1 lakhs. The battle-fields of FEROZESHĀH and MUDKĪ are in this *tahsil*.

Zira Tahsil.—*Tahsil* of Ferozepore District, Punjab, lying between $30^{\circ} 52'$ and $31^{\circ} 9'$ N. and $74^{\circ} 47'$ and $75^{\circ} 26'$ E., with an area of 495 square miles. It is bounded on the north by the Sutlej, which divides it from Lahore and Amritsar Districts. The natural divisions of the country are the Bet, or alluvial lands along the river, irrigated by the Grey Canals; the Rohi or upland plateau, with a good loam soil; and a long narrow alluvial tract of more recent formation than the Rohi proper, between the Bet and the Rohi. The population in 1901 was 176,462, compared with 174,138 in 1891. The head-quarters are at the town of ZĪRA (population, 4,001). The *tahsil* also contains the towns of MAKHU (1,355) and DHARMKOT (6,731), and 342 villages. The land revenue and cesses amounted in 1903-4 to 2.7 lakhs.

Moga Tahsil.—*Tahsil* of Ferozepore District, Punjab, lying between $30^{\circ} 8'$ and $30^{\circ} 54'$ N. and $74^{\circ} 54'$ and $75^{\circ} 26'$ E., with an area of 807 square miles. It is bounded on the south by Patāla, and on the west by the Faridkot State. It lies almost wholly in the upland plateau known as the Rohi, which has a good loam soil and is irrigated by the Sirhind Canal. The population in 1901 was 245,857, compared with 235,806 in 1891. MOGA (population, 6,725) is the head-quarters. The *tahsil* also contains 202 villages. The land revenue and cesses amounted in 1903-4 to 4.7 lakhs. The village of MAHRĀJ is of some religious importance.

Muktsar Tahsil. (*Muktesar*).—*Tahsil* of Ferozepore District, Punjab, lying between $30^{\circ} 9'$ and $30^{\circ} 54'$ N. and $74^{\circ} 4'$ and $74^{\circ} 52'$ E., with an area of 935 square miles. It is bounded on the north-west by the Sutlej, which divides it from Montgomery and Lahore Districts, on the east by Faridkot, and on the south-east by Patāla. On the west is a belt of alluvial land along the left bank of the Sutlej, irrigated by the Grey Canals. The middle portion of the *tahsil* is a level plain with a firm soil, while north and south the country is sandy. The central and southern portions are irrigated by the Sirhind Canal. The population in 1901 was 172,445, compared with 161,492 in 1891. The head-quarters are at the town of MUKTSAR (population, 6,389). The *tahsil* also contains 320

villages. The land revenue and cesses amounted in 1903-4 to 2.7 lakhs.

Fāzilka Tahsil.—*Tahsil* and subdivision of Ferozepore District, Punjab, lying between $29^{\circ} 55'$ and $30^{\circ} 34'$ N. and $73^{\circ} 52'$ and $74^{\circ} 43'$ E., with an area of 1,355 square miles. It is bounded north-west by the Sutlej, which divides it from the Dipālpur *tahsil* of Montgomery District, and east by the Patiala State. It is divided into three well-marked natural divisions: a narrow low-lying belt along the Sutlej, a somewhat broader strip of older alluvium, and a plain broken by sand-hills, which extends to the borders of Bikaner and is irrigated by the Sirhind Canal. The population in 1901 was 197,457, compared with 135,634 in 1891. It contains the town of FĀZILKA (population, 8,505), the head-quarters, and 319 villages. The land revenue and cesses amounted in 1903-4 to 2.2 lakhs.

Mamdot Estate (*Muhammadof*).—Estate in the Ferozepore, Muksar, and Fāzilka *tahsils* of Ferozepore District, Punjab. Area, 83 square miles of proprietary land, with 309 held in *jāgir*. It is held by the minor Nawāb of Mamdot, Ghulām Kutb-ud-dīn Khān, a Pathān, whose ancestor Kutb-ud-dīn Khān held the principality of KASŪR, but was expelled from it by Ranjīt Singh in 1807 and retired to Mamdot, which he had conquered from the Raikot chief in 1800. His son Jamāl-ud-dīn Khān held Mamdot as a sief of the Lahore kingdom till 1848, when he received the title of Nawāb, with the powers of a ruling chief, from the British Government; but the powers thus conferred were abused by Jamāl-ud-dīn Khān, and were therefore withdrawn, the State being annexed to British territory in 1855. It was, however, subsequently conferred as an estate on the Nawāb's younger brother Jalāl-ud-dīn Khān, who had rendered good service in 1848 and 1857. Jalāl-ud-dīn died in 1875, leaving a minor son, by name Nizām-ud-dīn Khān, and the estate was managed by the Court of Wards until 1884, when the ward came of age and took charge of it. He died in 1891, leaving an infant son and the estate heavily involved in debt. It is now again under control of the Court of Wards, and the young Nawāb is being educated at the Aitchison College, Lahore. The gross income of the estate, which is the finest in the Punjab, is now Rs. 3,80,000. It owes its prosperity mainly to the Grey Canals.

Abohar.—Ancient town in the Fāzilka *tahsil* of Ferozepore District, Punjab, situated in $30^{\circ} 9'$ N. and $74^{\circ} 16'$ E. Population (1901), 5,439. Tradition ascribes its foundation to

Jaura, a grandson of the legendary Bhatti king, Rājā Rasālu, and it was the capital of Bhattiāna. It was named Uboh-har, or the 'pool of Uboh,' after Jaura's wife. It lay on the ancient high road from Multān to Delhi, and was visited by Ibn Batūta (A.D. 1332). In it was resident the family of Shams-i-Sirāj Afif, the author of the *Tārikh-i-Fīroz Shāhi*, whose grandfather was collector of the district, then a dependency of Dipālpur. The place is now of no importance. It has a Government dispensary.

Dharmkot.—Town in the Zira *tahsil* of Ferozepore District, Punjab, situated in $30^{\circ} 57' N.$ and $75^{\circ} 14' E.$, 41 miles east of Ferozepore. Population (1901), 6,731. The town was originally known as Kotālpur, but was renamed after its occupation in 1760 by the Sikh chieftain, Tāra Singh, of the Dallewāla confederacy, who built a fort, now destroyed. The municipality was created in 1867. The income and expenditure during the ten years ending 1902-3 averaged Rs. 3,600. In 1903-4 the income was Rs. 3,900, chiefly from octroi; and the expenditure was Rs. 3,500. Dharmkot being situated near the grand trunk road, with a good bazar, and being the only town in the immediate neighbourhood, a considerable trade is carried on in piece-goods, brought to the market via Ludhiāna, and in grain. The town possesses a vernacular middle school maintained by the municipality, and a Government dispensary.

Fāzilka Town.—Head-quarters of the subdivision and *tahsil* of the same name, Ferozepore District, Punjab, situated in $30^{\circ} 33' N.$ and $74^{\circ} 3' E.$, and the terminus of the Fāzilka extension of the Rājputāna-Mālwa Railway. It has been connected with Ludhiāna, Ferozepore, and the Southern Punjab Railway by a line recently constructed. Population (1901), 8,505. It was founded about 1846 on the ruins of a deserted village, named after a Wattu chief, Fāzil. It is a considerable grain mart and contains a wool press. The municipality was created in 1867. The income during the ten years ending 1902-3 averaged Rs. 21,300, and the expenditure Rs. 22,400. In 1903-4 the income was Rs. 16,000, chiefly derived from octroi; and the expenditure was Rs. 18,500. The town has an Anglo-vernacular middle school maintained by the municipality, and a Government dispensary.

Ferozepore Town.—Head-quarters of the District and *tahsil* of Ferozepore, Punjab, situated on the old high bank of the Sutlej, in $30^{\circ} 58' N.$ and $74^{\circ} 37' E.$, on the North-Western Railway; distant by rail from Calcutta 1,198 miles, from Bombay 1,080, and from Karāchi 788. Population (1901), with can-

74° 50' E., about 12 miles from the left bank of the Sutlej. It is famous for the attack made upon the formidably entrenched Sikh camp, on December 21, 1845, by the British forces under Sir Hugh Gough and Sir Henry Hardinge. After two days' severe fighting, the entrenchments were carried and the enemy completely routed, but not without heavy losses on the part of the conquerors. No traces of the earthworks now remain, but a monument erected upon the spot perpetuates the memory of the officers and men who fell in the engagement. The real name of the place, as called by the people, is Pharūshahr, corrupted into the historical name Ferozeshāh.

Mahrāj.—A collection of four large villages in the Moga *tahsil* of Ferozepore District, Punjab, situated in 30° 19' N. and 75° 14' E. It is the head-quarters of a *pargana*, held almost entirely by the Mahrājki section (*af*) of the Sidhu Jats, the clan of which the Phūlkīān families of Patiāla, Nābha, and Jind are another section. A great excavation, from which was taken earth to build the town, is regarded as a sacred spot, offerings being made monthly to the guardian priest. The Mahrājkiāns, who own the surrounding country as *jāgīrdārs*, form a distinct community: physically robust, but litigious, insubordinate, and addicted to excessive opium-eating. Population (1901), 5,780. The place possesses a vernacular middle school and a Government dispensary.

Makhu.—Town in the Zira *tahsil* of Ferozepore District, Punjab, situated in 31° 6' N. and 75° 4' E., 30 miles north-east of Ferozepore town. Population (1901), 1,355. The municipality was created in 1867. The income during the ten years ending 1902-3 averaged Rs. 1,100, and the expenditure Rs. 1,000. In 1903-4 the income was Rs. 1,500, chiefly from octroi; and the expenditure was Rs. 1,000.

Mamdōt Village.—Village in Ferozepore District, Punjab, and former capital of a State, situated in 30° 53' N. and 74° 26' E., on the open plain, about 2 miles south of the Sutlej. Population (1901), 2,631. The walls rise to a height of 50 feet, and have a rectangular form, with a round tower at each corner and in the middle of each face. More than two-thirds of the fort was carried away in 1877-8 by the Sutlej, and a branch of that river now flows under the walls of the remainder. Anciently known as Muhammadot, it formed the centre of an *ilāka*, which became depopulated during the Mughal period and was occupied by the Dogars about 1750. Shortly afterwards, the Dogars made themselves independent, but were soon reduced to subjection by Sardār Subha Singh, a Sikh chieftain.

With the assistance of the Rai of Raikot, they expelled the Sikhs; but the Rai made himself supreme at Mamdot, and the Dogars then revolted with the aid of Nizām-ud-dīn and Kutb-ud-dīn of Kasūr. Nizāmud-dīn was murdered by his three brothers-in-law, whom he had ousted from their *jāgīrs*. Kutb-ud-dīn eventually submitted to Ranjit Singh, relinquishing Kasūr, but retaining Mamdot in *jāgīr* subject to the service of 100 horse. Nizām-ud-dīn's son received a corresponding *jāgīr* in Gogaira, but laid claim to Mamdot. With the Dogars' aid he expelled Kutb-ud-dīn, but was finally recalled by the Mahārājā, who confirmed Jamāl-ud-dīn, son of Kutb-ud-dīn, in the succession. Jamāl-ud-dīn sided openly with the Sikhs in 1845, but rendered certain services towards the close of the campaign to the British Government, which requited him by maintaining him in possession of Mamdot as a protected chief with the title of Nawāb. Jamāl-ud-dīn, however, was guilty of serious misgovernment, and the Dogars especially, having incurred his resentment, suffered grave oppression. The British Government therefore, after an inquiry, deposed him in 1855, and annexed his territory. His estates were in 1864 conferred on his brother Jalāl-ud-dīn to the exclusion of his sons. The present Nawāb, Ghulām Kutb-ud-dīn, who succeeded in 1891, is the grandson of Jalāl-ud-dīn.

Moga Town.—Head-quarters of the *tahsīl* of the same name in Ferozepore District, Punjab, situated in 30° 49' N. and 75° 10' E., 35 miles south-east of Ferozepore town on the Ferozepore road. Population (1901), 6,725. The Tayyan fair is held here in the month of Chet (March–April). The chief educational institutions are the Dev Samāj Anglo-vernacular high school (unaided), and an Anglo-vernacular middle school maintained by the municipality. There is also a Government dispensary.

Mudki.—Town in the District and *tahsīl* of Ferozepore, Punjab, situated in 30° 47' N. and 74° 55' E., on the road between Ferozepore and Ludhiāna. Population (1901), 2,977. It is memorable for the battle which inaugurated the first Sikh War, fought on December 18, 1845, on the plain 26 miles south of the Sutlej. Two days before this battle, the Sikhs had crossed the boundary river at Ferozepore. They were met by a much smaller British force at Mudki, and driven from their position, with the loss of 17 guns, after a hard contest, in which the British lost a large proportion of officers. Monuments have been erected on the battle-field in honour of those who fell.

Muktsar Town (*Muktesar*).—Head-quarters of the *tahsil* of the same name in Ferozepore District, Punjab, situated in $30^{\circ} 28' \text{ N.}$ and $74^{\circ} 31' \text{ E.}$, on the Fāzilka extension of the Rājputāna-Mālwa Railway. Population (1901), 6,389. Muktsar is the largest town and principal trade mart in the west of Ferozepore District. Apart from its commercial importance, the town is chiefly noticeable for a great Sikh festival, which takes place in January. It lasts for three days, and commemorates a battle fought in 1705-6 by Gurū Govind Singh against the pursuing imperial forces. There is a large tank in which pilgrims bathe, begun by the Mahārājā Ranjit Singh, and continued and completed by the chiefs of Patiāla, Jind, Nābha, and Faridkot. The municipality was created in 1867. The income during the ten years ending 1902-3 averaged Rs. 6,100, and the expenditure Rs. 4,900. In 1903-4 the income was Rs. 6,800, chiefly from octroi; and the expenditure was Rs. 6,200. There is a Government dispensary.

Zira Town.—Head-quarters of the *tahsil* of the same name in Ferozepore District, Punjab, situated in $30^{\circ} 59' \text{ N.}$ and $74^{\circ} 59' \text{ E.}$, 24 miles east of Ferozepore town. Population (1901), 4,001. The municipality was created in 1867. The income during the ten years ending 1902-3 averaged Rs. 4,200, and the expenditure Rs. 3,900. In 1903-4 the income was Rs. 4,800, chiefly from octroi; and the expenditure was Rs. 3,400. The town is of no commercial importance. It has a vernacular middle school maintained by the municipality, and a Government dispensary.

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